WORKING PLAN

FOR

THE KANYAKUMARI FOREST DIVISION
FROM 1988-89 to 1997-98

By

Thiru G. S. RAWAT, I. F. S.,

DEPUTY CONSERVATOR OF FORESTS
MADURAI-2.

Under The Direction of the
Chief Conservator of Forests
MADRAS - 600 006

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PREFACE.

Kanyakumari Forest Division was formed from 1st April 1977. This is the first working plan of Kanyakumari Division. The previous working plan written by Thiru Y. S. KADAKSHAMAN, I.F.S., was for Tirunelveli South Division for the period 1976-77 to 1985-86. Due to various reason the revision was not taken up in time, it was delayed by two years. However the revision work was taken up on 1st April 1986.

The Reconnaissance report was submitted on 6th August 1986 and discussed at Coimbatore on 10th February 1987. The order of Chief Conservator of Forests on reconnaissance report were issued in T1/79436/86, dated 27th April 1987.

The writer is thankful to Thiru S. John Joseph, I.F.S., Chief Conservator of Forests, Thiru M. Harikrishnan, I.F.S., Additional Chief Conservator of Forests (Planning and Development) and Thiru K. Viswanathan, I.F.S., Conservator of Forests, Working Plan Circle for their valuable guidance during the preparation of plan.

The writter is also thankful to Thiru P. K. Ponnusamy, I.F.S., Conservator of Forests, Tirunelveli Circle and Thiru N. Krishnakumar, I.F.S., District Forest Officer, Kanyakumari Forest Division for their suggestions.

There were frequent transfers of Rangers and Foresters. The following Rangers and Foresters helped in the preparation of the plan.

RANGERS :

(1) Thiru A. Thanikachalam
(2) Thiru T.S. Rangasamy
(3) Thiru R. Muthusamy
(4) Thiru R.S. Ramasubbu
(5) Thiru S.A. Kareem
(6) Thiru V. Srinivasaperumal
(7) Thiru C. Rajendran

FORESTERS :

(1) Thiru V. Natarajan
(2) Thiru G. Jayaraman
(3) Thiru G. Balasubramanian
(4) Thiru M. Chandrasekaran
(5) Thiru R. Gopalakrishnan
(6) Thiru S. Devadoss
(7) Thiru R. Venkatesalu
(8) Thiru M. Nagarajan
(9) Thiru K Ponnurangam

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The writer places on records, his appreciation for the work done by Tmt. J. Kannaki, Draughtsman Grade II and Tmt. J. Jothi, Steno-typist.

Madurai,
16th March 1988.

G. S. RAWAT,
Deputy Conservator of Forests.

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PART I.

CHAPTER I.

THE TRACT DEALT WITH.

Section 1—Name and Situation :

1. Kanyakumari Division was formed with effect from 1st April 1977 with headquarters at Nagercoil in accordance with the G.O. Ms. No. 261, dated 26th March 1977. The division comprises of three territorial ranges with headquarters at Kulasekaram, Azhagiapandipuram and Boothapandi and four other special ranges one each for Government Timber Depot at Nagercoil, Upper Kothaiyar, Survey I and Survey II.

2. This incidentally is the first regular working plan for Kanyakumari Division as it exists today. The division was till date covered by prescriptions from the working plan for the erstwhile Tirunelveli South Division written by Thiru Y.S. Kadakshamani, I.F.S., The now defunct Tirunelveli South Division included the entire Kanyakumari Division forests as well as some forests from Tirunelveli district also. Therefore in effect, though this may euphemistically be called as the first working plan for Kanyakumari Division, it is only a revision of the Plan written by Thiru Y.S. Kadakshamanai, I.F.S., for Tirunelveli South division. This revision was ordered in Chief Conservator's proceedings No. T1/108641/85, dated 13th March 1986.

3. *Location.*—Kanyakumari Division is situated at the South West coast of India appropoximately between 77°—10′—77°—35′ east longitude and 8°—5′ 8°—35′ North latitude.

Boundaries ..	North ..	Tirunelveli Forest Division and Kalakadu Wildlife Sanctuary boundary.
	South ..	Kodayar left bank channel and Thovala channel.
	West ..	Kerala State
	East ..	Tirunelveli District boundary.

Section 2—Configuration of the Ground :

4. *Western ghats.*—The western ghat which runs North south forms one continuous block along the western boundary of the division. The entire area is distinctly hilly and in many places very steep and rugged. The higher reaches are steep with few prominent peaks. The highest point is 1829.4 m (6002 feet) above M.S.L. at the trijunction of Mahendragiri, Kalakad and Veerapuli Reserved Forests. Other important peaks are Mahdendragiri (1645. 2m) in Mahendragiri Reserve Forests, Mottaichi Peak (1590.4 m) and Varaittumudi (1426.2 m) in Klamalai Reserve forests, the golden rock (1434.7 m) and Vanamuttimalai in Klamalai Reserve forests. The valleys and flat lands between the spurs are accessible and exploitable and contain valuable forests.

5. *Drainage.*—The whole area is traversed by a net work of rivers which feed the reservoirs and numerous tanks which from the basis for agriculture in this part of the country. The main rivers which are of importance for irrigation are the Manimuthar, Varattar, Pachiar, Kodayar, Masupattiar and the Chittar. The general direction is south westernly.

6. *Reservoir Projects.*—The Upper Kodayar reservoir impounding the Kodayar river water is used for generation of electricity and later this water gets stored in pechiparai reservoir and used for irrigation. Other irrigation projects reservoir are Perunchani, Manimuthar etc.

Section 3—Geology, Rock and Soil :

7. The major part of the division is represented by Archaen gneoisses covered in the coastal regions by large tracts of reddish soil of considerable thickness. The Archaen rocks are represented by a variety of rock types of widely different mineralogical composition. They have been intruded profusely by later rocks and altered to such a degree that a differentiation between the individual members is often difficult. The rocks represented are of deep seated metamorphic origin and have resulted due to complex fold movements that have taffected the western ghats in their formation. The rocks are of such antiquity hat they may be termed as the basement complex on which other younger sedimontary rocks have been laid down.

8. The Archaean formations are represented by quarries, crystalline lime stone, garnetiferous gneisses of astnokites granites and pegmatites. The trend of rock type conforms to the regional trend of the hill ranges.

9. Many mineral deposits of economic value have been recorded in the Kanyakumari region. The most note worthy among them are the limestone gypsum, beach sand containing monosite and limenite, graphitel, clay and mica. A number of mineral based industries utilising these minerals have been established and are being transported to foreign countries.

10. *Soils.*—The soil is mostly loamy and assumes sandy or clayey character depending on the accumulations of wash on the surface. The depth of the soils vary widely. In Valleys and low lying areas where the wash from the surrounding hills accumulates, the soil is fairly deep and such places often supported good vegetation on the hill slopes and elevated ground which are subject to heavy wash. The soil has a characteristic yellow or reddish yellow colour. On the tops and higher slopes of hills where the wash is excessive the ground is rocky and soil is shallow and hard.

Section 4—Climate and Rainfall :

11. In Kanyakumari district due to proximity to the sea the stmosphere is humid. Cooler winds during the summer and well distributed showers throughout the year make the climate mild.

12. The south west monsoon brings the major part of the rainfall. It usualls sets in by the first week of June. The heaviest precipitation is in June and July, A few showers of north east monsoon are also received in Kanyakumari district. In the eastern slope of western ghat a few showers of south west monsoon are received.

13. *Rainfall.*—The annual rainfall in millimetres at various stations in the division is given in Appendix No. I.

14. *Winds.*—During south west monsoon the wind blows constantly from westerly or south westerly direction. Wind increases the fire hazard by drying up the grass and leaves in the forest which eventually become susceptible to fire in the month of February and March.

Section 5—Water Supply :

15. In general water scarcity is experienced during dry months and through the division as the rivers and reservoirs dry up during the period. Regarding the supply of water for the subordinates living in Government quarters mostly wells form the source of supply.

Section 6—Distribution and Area :

16. Kanyakumari Forest Division is divided into three territorial ranges i.e., Kulasekaram, Alagiapandipuram and Boothapandi.

THE EXTENT OF KANYAKUMARI DIVISION.

Sl. No.	*Name of Range.*	*Reserved Forest in Ha.*	*Reserved Land in Ha.*	*Total in Ha.*
(1)	(2)	(3)	(4)	(5)
1	Azhagiapandipuram ..	14,296.00	4.56	14,300.56
2	Kulasekaram	18,860.00	..	18,860.00
3	Boothapandis..	12,621.57	17.13	12,738.70
		45,777.57	21.69	45,799.26

Section 7—State Boundaries :

17. In Kanyakumari District the boundaries are not clearly demarcated on the ground and worse is the case of enclosures which merge with the forests around and make encroachment easily possible and not detectable in the absence of records and maps. So encroachments are quite common. The kani settlements inside the forests are not demarcated with the result they have increased in number and extent. The state boundaries between Kanyakumari District and Kerala State boundaries between Klamalai reserved needs to be properly demarcated and kept clear.

18. The boundary descriptions notified under Section 180 the Forest Act of Ex-Travancore Cochin State which corresponds the Section 16 of the Tamil Nadu Forest Act are so vaguely/described that encroachments cannot be detected easily. No surveyed sketches for the reserved forests of Kanyakumari district are available. The exterior boundaries are not conspicuously demarcated on the ground. The demarcation had been done with survey stones and in certain places with cairns. Often these cairns or survey stones are missing and render checking the boundary difficult if not impossible. Similarly the boundaries of private estates and plantations which are inside the reserved forests have not been well defined either on the ground or in the notifications. Since we have no surveyed sketch for the boundaries of Reserved forests, we have to depend on the re-survey sketch in respect of private lands adjoining the forests and inside the forest.

19. In G.O. Ms. No. 1133, Agriculture Department, dated 7th April 1971, Government have accepted the suggestions of the Assistant Director of Survey and Land Records Nagercoil to relay and demarcate the boundaries between the Reserved Forest areas and private holdings in Kanyakumari district in order to assess the encroachments by them inside the Reserved Forests. The Government have also issued suitable instructions to the Assistant Director of Survey, Nagercoil regarding this. In the meanwhile, the Government also asked the Chief Conservator of Forests, to arrange for the erection of temporary or permanent forest cairns on the boundaries, after the boundaries are relaid and demarcated. Accordingly the Assistant Director of Survey was said to have carried out the survey work and also supplied the sketches for the encroachments noticed.

20. But unfortunately action was not taken close on the heels to erect cairns and evict encroachments except in a few cases, so the status quo continues or encroachments are on the increase.

21. *Encroachments.*—Encroachments are a common feature in Kanyakumari Forests which could not be checked up in the absence of maps and detailed notification. There are 425 encroachments covering an extent of 231.56 Ha. which are not covered by civil suit.

22. There are 41 Civil suits covering an area of 980.50 Ha. pending in various courts as follows :—

Total No. of civil cases pending in various courts 41

Total extent covered by the Civil suits .. .. .. 980.50 Ha

23. The 41 cases are pending in the following courts.

(1)	No. (2)	Extent (3)
1 District Munsiff Court, Nagercoil	3	342.92
2 Sub-Court, Nagercoil	3	113.53
3 District Court, Nagercoil	1	1.62
4 District Munsiff Court, Padmanaphapuram	18	25.47
5 District Munsiff Court, Kulithurai	2	5.24
6 Assistant Settlement Officer, Madurai	2	120.69
7 Commissioner of Land Administration	2	26.77
8 High Court, Madras	4	61.40
9 Supreme Court of India	1	382.86
	41	980.50

24. To help the District Forest Officer, One Special Government Advocate was sanctioned in G. O. Ms. No. 90 F & F. Department dated 2nd February 1982 to deal exclusively with forest cases, and in G. O. Ms. No. 908 F. & F. Department, dated 28th July 1983 the Government have appointed Thiru P. Palani, B. Sc., B.L., as Special Government Advocate to this Division. He is continuing in the post.

Section 8—Legal Position :

25. *Reserved Forest.*—The Reserved Forests are notified under Section 16 of Madras Forest Act or under section 18 of Travancore Forest Act. The admitted rights and concessions are shown in their respective Section 16 or 18 Notification as the case may be.

26. *Ex-Zamin Forests.*—The ex-zamin forests have not been constituted into reserved forest. In the case of these forests Section 4 Notifications have to be issued.

27. *Reserved Lands.*—The Reserved Lands are at the moment notified under Section 26 of Madras Forest Act.

28. *Kani settlement.*—There were 23 Kani settlements in the division in 1958 and the number has increased to 47 now and the total extent is 1257.38 ha. The Kani settlement have been surveyed and the extent of each kani settlement is known. However in the absence of permanent demarcation enlargement of these possessions take place. Details are furnished in Part II Tribal resource (Kanis) Development working circle.

29. *Royalties.*—Under Section 52(i) of the Travancore Cochin Forest Act of 1951 trees of the following species that is to say teak, blackwood (Delbergia latifolia) and sandalwood (Santalam album) along with ivory and teeth of wild elephants whether grown or found on Government land or private property, are royalties; and no trade shall be carried out in them unless they have been duly obtained from the Government. They cannot be cut by the owners of the property on which they stand without the specific permission of the Forest Department and in which case the royalty fees have to be collected from them. But when such trees are remoedved

by the Government the owner of the land is entitled to certain payment known as 'Kudivilla' which is a part of the net sale proceeds of the royalties. In 1927 in the Sri Mulam Popular Assembly representation were made regarding the right over the royal trees standing in private lands. Delay and hardship in settling the Kudivilla claims were brought to the notice of Government and it was urged that holders of private lands should be allowed the full rights over the royalties, as in the neigh bouring Madras State. A committee was formed to examine and discuss the question on all its bearings. After inspection of localities and discussions, the committee opened that both the State and the people would be benefited if the monopoly on royalties was abolished within ten years by which time the Forest Department should put forth its best endeavour to extract all royal trees standing on private land and leave the people whatever was left behind free from all restrictions. Accordingly the State was divided into three tracts as shown below:—

Tract I—West of the main southern road from Trivandrum to Nagercoil Aramboli.

Tract II—West of the road passing from Nagercoil to Thuckalai, Meycode, Kulasekaram, Kaliel and Nedumangad.

Tract III—All lands east of Tract **II.**

30. Further to expedite matters and save private owners from considerable delay and less in getting kudivilla amount fixed rates of Kudivilla were also fixed and given effect to from 1931 (14th Spetember, 1107, Malayalaera). As the two years allowed for the abolition of royalties in Tract I expired by the end of 1108 Malayalaera (1933), a proclamation was published in 1936 abolisihing this monopoly in Tract I. Similarly the monopoly over tract II was also lifted after a stipulated time And at the time of States Reorganisation on 1st November 1956, the monopoly continued in Tract III and this right in Tract III was to have extinguished. The right in Tract III was to have extinguished on 1st January 1957, after extracting all royal trees standing on private lands. But the owners adopted dilatory tactics with the object of putting off their extraction upto this date, so that they may have these trees once the royalty rights are lifted. Now the monopoly right over the royal trees has been made permanent. The Tract III over which this right is exercisable is the area situated east of the road from Nagercoil to Thucklai, Thucklai to Meycode thence to Kulasekaram, Kaliel and thence to Nedumangad upto the limit to Vilavancode taluk in Kanyakumari district.

Coffee land registry and Government right over certain trees in Kanyakumari.—

31. It is necessary to describe in detail the coffee lands and the rights of Government over the trees within these lands. There are two broad categories of land under private occupation, and these are Pandarapattam land and others. Pandara pattam land secures obsolute rights to the owners of the land and on the trees except royalties. But the term 'Pandarapattam land' refers more to the tenuer of the land as such rathar then the nature of the holding by an individual. A Pandarapattam land if it had been granted for any plantation puropse, was granted often under the waste land rules. It is to these terms and conditions of grant that one should refer when deciding whether a holding is held with full absolute rights or not. There are several estates in Kanyakumari held under waste land rules and land rules. The estate owners have been representing that their estates were Pandarapattam lands and not coffee land grants. This claim is advanced so that they may get the timber of all reserved and unreserved trees for themselves without payment of any seigniorage fee. Now this change from the coffee land estate to Pandarapattam took place and whether this is authorised or whether it was merely a fra d can be decided with reference to the original revenue records from the time of grant and with reference to the nature of assessment that was paid by these owners. A correlation statement of the nature of holding was prepared for these estates and it was noticed that the rate of assessment for all these lands was Re. 1 prior to the introduction of the basic tax, that the lands which are now claimed as Pandarapattam are not really so but were only coffee land grants and as such the right of Government in these estates lands to royalties and reserved trees is secured under the title deeds given under coffee land or waste land rules.

32. Another point to be scrutinised in connection with these estates is the nature of the trees. There ae three categories of trees in the area (1) Unreserved Trees, (2) Reserved Trees andr(3) RoyaltyTrees. In Pandarapattam tenure the Unreserved Trees, Reserved are absolutelyowned by the holder of the land. For the royalty

rees removed from his land he is entitled to 'Kudivilla'. Under the coffee land rules the holder of the land may cut the trees for his own use, but if he wants to remove any of the reserved trees (the reserved trees are listed under the Timber Transit Rules in Travancore-Cochin Government order No. Roc. 5438/29, Development, dated 5th April 1933) the estate owner has to pay Kuttikanam. By an amendment to rule 26 of the coffee land rules issued in November 1913 Kuttiy kanam was equated with the seignio age rate. This applied to the cutting of all or any of the trees in the estate area. For removal of royalty trees from lands granted under coffee land rules Kudivilla has not to be paid to the holder.

The following statement gives a list of all coffee grants in Thovala and Kalkulam taluks :—

Name of Village.	*Survey number.*	*Name of Estate.*	*Name of Owner.*
(1)	(2)	(3)	(4)
Ponmanai ..	3063, 3065	Balamore ..	Dr. M. Mathias.
Do.	3068	Myloni	Do.
Do.	3041, 3042, 3043 and 3045.	Seafield	South Travancore Plantation Company Limited.
Do.	3046, 3048, 3050, 3051 and 3053.	Glanmore	Do.
Do.	3054	Gorimony	Do.
Do.	3057	Telford	Do.
Alagiapandi-puram.	2903	Blackrock ..	Rev. John Case.
Do.	2910, 2911/1, 2911/2, 2905 and 2906.	Olivers	Do.
Do.	2902/2 and 2902/3	Do. ..	C.N. Sompson.
Do.	2913, 2914/1,2,3, and 2915/1.	Mahendagiri ..	Mathew Abraham.
Do.	2916/1 and 2917/2	Glen Morison ..	Do.
Do.	2918/1, 2 and 2919	Woodland ..	....
Do.	2899 and 2901 ..	Upper Victoria ..	D.C. Joseph.
Do.	2650/2	Kunnimuthucholai	R.C. Tuticorin.
Do.	2660/3, 2645, 2647/1, 3 and 2660/1.	Do. ..	Arulappa Pillai.
Do.	2648, 2654/2 and 2656.	....	K. Arulswami.
Do.	2649/2, 2658, 2657/2, 3/2651 and 2250.	....	M. David,
Do. ..	2644/1, 2662 and 2650/3,4,5.	....	S.S. Somasundaram Pillai.
Do.	2676, 2674, 2673, 2675, 2681, 2680 and 2672.	....	Do.
Do.	2583 and 2685 ..	....	A. Yacob Sahib.
Do.	2668 and 2666 ..	Kadampalaym ..	Syed Valli.
Do.	2669	Do. ..	Y. S. Karim.
Do.	2669/1	Do. ..	S. Paul Nadar.
Do.	2671/1 and 2684 ..	Do. ..	P. Karukkumuthu.

CHAPTER-II

DESCRIPTION OF THE FORESTS

Section 1—Composition and Condition of the Crop :

33. *General.*—Various types of fo ests f om luxu iant tropical wet evergreen forests to southern thorn scrub forests occur in this division, becuase of the diverse locality factors. Rainfall varies from 50 cms. to 310 cms. and elevation from sea level to 1829m. Edaphic and biotic factors have played equally important roles to bring about the types of forests as it exists to day.

34. The following forest types occur in the division :—

1	1A/C3	..	Southern hill-top tropical evergreen forests.
2	1A/C4	..	West Coast tropical evergreen forests.
3	2A/C2	..	West Coast semi-evergreen forests.
4	3B/C1(*b*)	..	Moist teak forests .
5	3B/C1(*e*)	..	Slightly moist teak forests.
6	3B/C2	..	Southern Moist mixed deciduous forests.
7	5A/C1(*b*)	..	Dry teak forests.
8	5A/C3	..	Sonthern dry mixed deciduous forests.
9	5/DS2	..	Dry Savannah forests.
10	6A/C2	..	Carnatic Umbrella thorn forests.
11	6A/C1	..	Southern thorn forests.
12	6A/DSI	..	Southern thron scrub.
13	8A/C1	..	Southern sub-tropical hill forests.
14	8A/E1	..	Ochlandra read brakes.

35. Instead of giving a broad and generalised description of the floristic composi tion for the various types, the forest types seen in each reserved forest and the composition of each type as seen in that partiuclar reserved forest are given below and marked in the forest type map also.

36. The forest types have been plotted on the map based on the visual observation. It must be well remembered that the line of demarcation between one type and another is not very sharp and the transition takes places gradually and almost imperceptibly. However, in certain localities, some types which may not be related in the ' successional scheme " have been found to occur due to certain special factors like " micro-climate ", occrence of valleys etc.

KANYAKUMARI DISTRICT

1. Therkumalai Reserved Forests

37. Therkumalai comprises of two Reserved Forests viz., Therkumalai east and west coverng an extent of 20,93 ha. (5,175 acres).Due toheavy browsing and grazing, illicit fellings in the past and periodic fires, the vegetation is in a highly degraded state. It is virtually devoid of any tree growth except in a sheltered valley where Tamarind (*Tamarindus indica*) occurs. The entire Reserved Forests supports Cymbopogon flexuosus almost to the exclusion of other species. Thermada triandra is another common areas. Saplings of Acacia planiforns and Acacia latronum occur here and there along the western slopes but these are not allowed to grow by the militant villagers who live nearby. These forestes fall under the type 5/DS2 viz—Dry Savannah forests except for the difference that *Cymbopogon* flexuosus dominates the vegetation. The forests represent the degradation stage of dry deciduous forests.

2. Thadakmalai Reserved Forest.

38. This Resevred forest coversan extent of 675ha.(1667acres) and lies adjacent to Poigaimalai Reserved Forests. The forests of this Reserved Forests can be conveniently classified under the type 3B/Clcle. South Indian Moist deciduous forests—slightly moist teak forests. The important species occurring here are described below :—

39. *Top canopy Tectona grandis.*—Is the predominent species occuring to an extent of about 40 per cent and associated with it are Anogeissus latifolia, Terminalia paniculata, Pterocarpus marsupium and Grewia tilaefolia.

40. *Second storey.*—Zizyphus xylopyrus, Emblica officinalis, Dillenia pentagyna and Strychnos nuxvomica occur to such an extent in the second storey that other species like Butea monosperma and Careya arborea are paled into insignificance. Acacia ferruginea occurs in dry sites.

41. *Shrubs.*—Randia dumetorum, Helectres isora, Atalantia monophylla, Clerodendron infortunatum are the common shrubs.

42. *Grasses.*—Cymbopogon flexuosus and Themada species are the common grasses.

43. *Climbers.*—Acacia intsia, Bauhina vahlii and Calycopteris floribunda are the important climbers.

3. Poigaimalai Reserved Forests,

44. This is a small Reserved Forest spread over 775 ha. (1915 acres) bounded by Mahendragiri Reserved Forests on the North-East Thadakamalai Reserved Forests on the South-east and Assambu Reserved Forests on the South-West. Floristically, there are only two forest types viz.

(*a*) 3B/Clc .. Souther Indian moist deciduous forests. Slightly moist teak forests.

(*b*) 3B/C2 .. South Indian moist deciduous forests Southern moist mixed deciduous forest.

45. The floristic composition of each type is described below :—

(*a*) 3B/Clc .. Slightly moist teak forests.

46. *Top Canopy.*—Teak is the predominant species of the top canopy constituting about 18.20 percent of the entire flora. Grewia tiliafolia, Terminalia chebula, Lageratroemia lanceolata and Melia composita, Pterocarpus marsupisum, Terimnalia paniculata are the common associates. Anogeissus latifolia occurs on the drier sites. There is a sprinkling of Dalbergia latifolia.

47. *Second storey.*—Zizyphus xylophrus, Strychno Morinda tinctoria and Wrightia tinctoria are comonly seen in the second story. Fire burrnt areas are inhabited by Emblica officiainalis and Careya arborea, while in the drier sites Acacia chundra and Albizzia amara have been noted.

48. *Shrubs.*—Randia dumetorum, Atalantia monophylla, Limonia asidissima, Heolectres isora, Lantana camara and Clerodendron infortunatum are the common apecies.

49. *Grasses.*—Cymbopogen flexuosus is the predominant grass. Themeda species and Andropogen species occur.

50. *Climbers.*—Acacia intsia and Calycopteris floribunda are frequently noticed.

(b) *SR/C2—Southern moist mixed deciduous forests* :

51, *Top canopy.*—Teak is virtually absent. Terminalia paniculata is a common species and associated with it are seen. Terminalia chebula. Lagerstroomia lanceolata. Grewia tillaefolia, Dalbergia latifolia, Schelichera oleosa, Albizzia odoratissima and Vitex altissima.

52. *Second Storey.*—This contains such species like Butea monosperima, Wrightia tinctoria, Emblica officiaianlis, Strychnos nuxvomica, Randia dumetorum. Dreir sites have some Acacias. There is not much diversity in the shrubs, grasses a climbers between the slightly moist teak forests and th moist mixed deciduous forests.

4. MAHENDRAGIRI RESERVED FORESTS.

53. Mahendragiri Reserved Forests occupies an area of 4,376 hectares (10,805 acres) with some enclosures. The various forests types met with in this Reserved Forests are given below in the order of priority.

(*a*) 6-A/C1 .. .. Southern thorn forests.

(*b*) 6-A/C2 .. .. Carnatic umbrella thorn forests.

(*c*) 8-A/C1 .. .. Southern sub-tropical hill forests.

(*d*) 5-A/C3 .. .. Southern dry mixed deciduous forests.

(a) 6-*A*/*C*1—*Southern thorn forests* :

54. *Top canopy.*—Zizyphus xylopyrus and Albizzia amara are the predominant, species. Associated with them occur Strychnes potatorum, Diespyros montana Morinda tinctoria and Dichrostachys cinerea. Along the stream banks, Schleichera oleosa and Stereosperumum suaveolens with occasional sprinkling of Syzygium cumini are common.

55. *Shrubs.*—Atalantia monophylla, Limonia acidissima Randia dumetorum, Dodonea viscosa and Cassia auriculata are the most common shrubs.

56. *Grasses.*—In areas heavily hecked by villagers, Cymbogon flexuosus predominates.

57. *Climbers.*—The common climbers are Zizyphus canoolia and Pterolobium indicum.

(b) 6-A/*C*2—*Carnatic Umbrella thorn forests* :

58. *Top canopy.*—Acacia planifrons is the characteristic species of those forests and often Acacia latronum is found associated with it. Zizyphus zylopyrus, Acacia chundra, Albizzia amara, Commiphora caudata and Dichrostachys cinerea have been found to be the other associates.

59. *Shrubs.*—Carissa carandus, Randia dumentorum and Cassia auriculata.

(c) *SA*/*C*1—*Southern sub-trophical hill forests* :

60. This type of forests are seen in the upper reaches especially in the valleys near Hariharaputhra estate. They are found mixed with grass lands and are locally termed as 'sholas' of the Nilgiris and the Palnis. The exhibit more of the sub-trophical features.

61. *Top canopy.*—Zyzypium arnottianum, S. cardneri, Actinodaphne hookeri, Litsaea species and Aporesa species are freequently met with. At the lower reaches Hopea parviflora and Pterospermum species are seen though they do not exactly fit in with this type.

62. *Second Storey.*—itex wightiana dominates the second storey.

63. *Shrubs.*—Strobilanthus species is the most common shrub.

64. *Grasses.*—There are not many grasses occurring as undergrowth except for a few occasional clumps of Ochlandra. Canes are the most common climbers, Epiphytes are also common.

(d) *5A/C3—Southern dry mixed deciduous forests* :

65. A small patch of this type ocuu occurs at the lower elevations. The top canopy consists of Anogeissus latifolia, Pterocarpus marsupium and Albizzia amara while the second t storey contains Zizyphus xylopyrus, Acacia ferruginea and Wrightia tinctoria. Themeda triandra is the common grass and occasionally Heteropogon contrortus is seen. Zizyphus oenoplia and Acacia intsia are the common climebers.

5. VELIMALAI, RESERVED FORSETS.

66. This is a small isolated Reserved Forests covering an extent of 1,282 hectare (3,167 acres) and supports only one type of forests, viz. the 'slightly moist teak forests'. This Reserved Forests is surrounded by a number of villages and biotic influences have played a great role in setting about a certain amount of degradation along the boundaries. Frequent forest fires and hacking have resulted in the replacement of the original vegetation by inferior species.

3B/*Clc.—Slightly moist teak forests.*

67. *Top canopy.—Tectona grandis* predominates the top canopy. Associated with it can be seen Terminalia paniculata, Terminalia bellerica, Anogeissus latifolia, Pterocarpus marsupium Bridelia retusa, Grewia tiliaefolia, Dalbergia latifolia and Albizzia lebback, Terminalia alata is rare.

68. *Second Storey.*—Butea monosperma, Strychnos muxvomica, Careya arborea Macaranga roxburghii, Zizyphus xylopyrus and Emblica officinalis.

69. *Bamboos.*—Bamboos are almost absent.

70. *Shrubs.*—The common shrubs are Clerodendron infortunatum, Lantana camara, Randia dumetorum, Helectores isora and Mallotus philipinensis.

71. *Grasses.*—Themeda triandra, Oryza grandialomia, Imperata cylindrica and Cymbopogon flexuosus.

72. *Climbers.*—Acacia intsia, Butea superba, Calycopteris floribunda and Cryptostedis grandiflora.

6. VEERAPULI RESERVED FORESTS.

73. This is a sprawling Reserved Forest spread over Azahiapandipuram and Kulasekaram Ranges with a total area of 24971 ha. (61650 acres). Wide Variations exist in altitude and climate, especially rainfall.

74. The important forest types occurring in this Reserved Forest are :—

(i) 1A/C3—Southern hill top tropical evergreen forests.

(ii) 2A/C2—West Coast semi-evergreen forests.

(iii) 3B/Clc—Slightly moist teak forests.

(iv) 3B/C2—Southern moist mixed deciduous forests.

(v) 8A/E1—Ochlandra reed brakes.

75. The order of importance based on the area occupied by each type is 3B/C2, 8A/E1, 2A/C2, 3B/Clc and 1A/C3.

(i) 1A/C3—*Southern hill top tropical evergreen forests.*

76. This type occurs in Muthukuzhivayal and adjacent localities. Considerable areas of this type have either been submerged in Kodayar Hydel Project or are in the process of submersion. This type of forest is an inferior edition of the typical wet evergreen forests. None the less, blocks where the composition and growth approximate to the evergreen forests, are not wanting. Areas exposed to wind and very steep slopes have a poorer type of vegetation.

77. *Top canopy.*—Calophyllum elatum, Cullenia excelsa, Poeciloneuron pauciflorum, Keema attenusta, Dysozylum malabaricum, Canarium strictum, Agrostiztachys meeboldii, A. indica, Aglaia roxbarghiana, Hopea parviflora and Mesua forrea domiate the top canopy.

78. *Second storey.*—Hydrocarpus species, Cinnamomum zeylanicus, Holigarna species, Syzygium cumini, Macaranga roxburghu and Elaecarpus species form the second storey.

Bamboos.—Bamboos are totally absent.

Shrubs.—There is a dense growth of over green shrubs.

Grasses.—Ochlandra travancorica and other Ochlendras occur here and there.

Climbers.—Calamus species, Calycopteris floribunda, Dioscorea species, Entada obassoloides are the cimmon climbers.

Endemism.—In preceipitous localities bordering Tirunelveli district, especially around Upper Kodayar, Bentinckia coddapanna, an interesting palm occurs as an endemic species. Pockets of this species can be seen even from a distance and it is delightful sight to watch this palm occupying the cliffs where the soil is very shallow. Along the depressions Arenga wightii and Pinanca docksonii, two other palms, are found in profusion, and the former yields a highly intoxicating toddy which is much sought after by the tribals.

(ii) 2A/C2—*Southern hill top tropical evregreen Forests*

79. This forest type is met with around Balamore and north-western and south-eastern parts of this Reserved Forests.

Top canopy.—Hopea parviflora, Mesua ferea, Melia composita, Kinsiodondron pinnatum, Artocarpus heterpophyllus, Stereospermum speciee. petro scpermum suberifolium and Vitex altissima are the major species noticed in the top canopy.

80. *Second Storey.*—This is usually occupied by Macaranga roxburghii, Diospyros species, Kanthophyllum flavescens and Polyalthia fragrans.

Bamboos.—Bamboos are totally absent.

Shrubs.—There is a fairly dense growth of shrubs, especially strobilanthus species and Curcuma species.

Grasses and reeds.—Ochlandra species occur to a considerable extent but not to the exclusion of other species.

Climbers.– In the moist depressions Calamus species are common.

A characteristic feature of this forest type is that wherever the forests are cleared, Macaranca roxburghii appears in profusion and dominates the clearings.

(iii) 3B/Clc—*Slightly Moist—Teak Forests.*

81. *Top canopy.*—Teak occurs in fair quantities. Associated with Teak Terminalia paniculata, T. alata, Pterocarpus marsupium, Anogeissus latifolia, Grewia tillieafolia, Lagerstroemia lanceolata, Vitex altissima Bridella retusa and Dalbergia latifole which are of very common occurrence.

Second storey.—Emblica officinalis, Careya arborea, Dillenia pentayna and Wrightia tinctoria are commonly seen.

Bamboos.—Bamboos are totally absent.

Shrubs and Climbers.—The species listed out for this type and described under the other Reserved Forests.

(iv) 3BIC2—*Southern Most Mixed Decidoius Forests.*

82. This is the predominant type seen in Veerapuli Reserved Forests especially in Alagiapandipuram Range.

Top canopy.—Teak is almost absent. The predominant species occurring in the top canopy are Terminalia paniculata, T. alata, Pterocarpus marsupium, Anogeissus latifolia, Lagerstroemia lanceolata, Grewia tilisefolia and Albizzia odoratissima Melia composita, Machilus macrantha and Butea monosperma. Vitex altissima, Pterospermum suberifolium and Kingi dendron pinnatum also occur to some extent.

Second storey.—Dillenia pentagyna, Embilca officinalis and Careya arborea are the species frequently met with in the second storey.

Bamboos.—Bamboos are almost absent.

Shrubs.—Helectres isora, Mallotus philippensis, Lantana camara, Clerodendron infortunatum and Randia dumetorum are the common shrubs.

Climbers.—Acacia intsia Calycopteris floribunda and Bauhinia Vahlli form the common climbers.

(v) 8A/E1—*Ochlandra Reed Brakes* :

83. The 'Reed Brakes' form an important and characteristic forest type occurrin, in Veerapuli Reserved Forests. Three species of reeds viz. (Oclandra travancorica O. rheedii and O. brandisii characterise this forest type. They occur almost in pure form in the higher reaches. In the depressions, sholas are seen.**[1]

7. Klamalai reserved forests.

84. Klamalai Reserved Forests lies entirely in Kulasekaram Range adjacent to Kerala border. It covers an extent of 6129 ha. (15360 acres). The important forest types seen in this Reserved Forests are:

(i) 2A/C2—West Coast Semi Evergreen Forests and

(ii) 3B/C2—Southern Moist Mixed Deciduous Forests.

(i) 2A/C2.—*West Coast Semi Evergreen Forests.*

85. The floristic composition described for this type under Veerapuli Reserved Forests almost holds good for Klamalai Reserved Forests except that Aporosa lindyayana and Vitex altissima predominate the northern and north-western portiond of this Reserved Forests. Ormosia travancorica is another species frequently seen in these forests.

(ii) 3B/C2—*Southern Moist Mixed Deciduous Forests.*

The description given under Veerapuli Reserved Forests applies well for this Reserved Forests also.

8. Asambu Reserved Forest.

86. The entire Asambu Reserved Forest lies in Alagiapandipuram Range and covers an extent of 3986 ha. (9844 acres). The chief forest types seen in this Reserved Forests are :

(i) 3B/Clc.—Slightly Moist Teak Forests and

(ii) 3B/C2.—Southern Moist Mixed Deciduous Forests.**[2]

87. This type is seen in the lower reaches of the Reserved Forest.

Top Canopy.—Teak occurs in fair quantities. The associates are Anogeissus latilofia, Terminalia paniculate, T. alata, T. bellerica, Pterocarpus marsupium, Grewia tilaefolia, Adina cordifolia, :agerstroemia lanceolate and Dalbergia lateifolia.

Second storey.—This includes such speciaes like Zizyphus xylopyrus, Emblica officinalis, Careya arborea, Dillonia pentagyna and Strychnos nuxvomica, Acacia ferruginca occurs in drier localities.

Bamboos.—Bamboos are virtually absent except for stray clumps occurring here and there.

Shrubs.—Randia dumetorum, Helectres isora, Clerodendron infortunatun, Lantana camera, Alntantia monophdeyllarvemention .s e

Grasses.—Along the lower reaches Cymbopogen flexuosus occurs commonly and at times it is found mixed with C. gidarba. Themsda is another common grass.

Climbers. –Calycopteris floribunda, Acacia intsia and ***Bauhinia vahlii*** are the climbers frequently met with.

The teak occurring in this forest type is mostly crooked and mis-shaped. Fire brurunt areas are usually inhabitated by Emblica officinalis, Careya arborea and Cymbopogon flexuosus.

(ii) 32.C2.—*Southern Moist Mixed Deciducus Foresyts*. –

88. This is the predominent forest type of this Reserved Forests covering the Upper reaches.

Top canopy.—Teak is totally absent. Terminalia paniculata is a common species. The other species are *T. alata* T. Chebula, T. bellerica, Dalbergia latifolia, Schlerichera oleosa, Albizzia oderatissima, Vitex altissima, Polyalthia fragrans Bridelia retusa, Alstonia scholaris and Bombax ceiba. In moist localities, especially near the water courses, *Hopas* parviflora and Mesus ferrea are common.

Second storey.—Butea monoperma, Emblica officianalis, Wrightia tinctoria, Strychnus nuxvomica and Sterculia villosa are common.

Bamboos.—Bamboos are absent.

Shrubs.—Helectres isora, Limonia acidesma, Randia dumetorum, Atlantia monophylla and Clerodendron infortunatum are the common shrubs.

Climbers.—Acacia intsia, calycopteris floribunda, Calamus species and Bauhinia vahlii form the imporatant climbers.

89. *The grass lands*.—The grass lands support a variety of grassess. The soil is usually shallow and barren rocky patches are met with frequently

90. *Pechiparai Grazing Block*—is a small Reserved Forests and covers an extent of about 60 ha. (147 acres). There is only very sparse tree growth and a portion of the area has already been converted into Cocoa plantations.

91. *Kottakara Reserved Land* been set apart for accommodating a college and play ground and is in the process of disreservation. A portion has been handed over to Railways. The balance area contains Acacias mostly.

92r *Kalkulam Grazing Block* : Tais is in 2 bit . Both contain no growth what soever except remnants of teak plantations raised in 1963 by way of a few saplings sticking out here and there in the bouldery rocks which is fully covered bo coarse grass.

Section 2—Injuries to which the crop is Liable :

93. *Climate*—The Chief climatic factor which determines the success or otherwise of all Regeneration operations in this Division is the rain, as timely Rainfall helps Regeneration Operations. The south-west monsoon breaks usually in June. The north-east monsoon also breaks in the middle of October and lasts till the first week of December. Therefore all the plantations work should be completed by the end of August.

94. *Wind.*—Strong westerly winds during May to August cause severe damage to the young seedlings raised artificially in plantations in plain forests by way of disturbing the root system and sometimes even uprootal. This is felt especially in Their forest and other places where attempts are made to stop wind erosion. Further the desiccating winds cause vilting upof young plants when moisture is low. In the dry season the wind helps to spread and intensify forest fires.

95. *Fire.*—Fires are common in the deciduous forest during the dry season killing young regeneration and rendering conditions favourable for the invasion of grass. The fires season in the eastern slopes of ghats is from March to September by destruction of advanced growth and natural renegneration. In Kanyakumari District, the fire season is short from February to April but large areas including plantations are burnt causing scoching of the peripheral trees in the isolated sholas around which vast extents of grass land are soon. The fire is mainly due to incendiarism by the hill tribes, graziers, minor forest produce collectors and owners of registered land holdings in the midst of Reserved Forest. It is not easily possible to put down these fires because of limited resources of fire fighting and many fires burnt themselves out and go unreported.

96. *Grazing.*—Grazing is a very common feature in this Division. Unrestricted grazing for the p ast 3 decades especially in easily accessible areas has caused severe set back to the natural regeneration. The damage caused to the artificial regeneration areas is also heavy. Further they are the carriers of certain diseases like anthrax and rinderpost which at times cause heavy mortality in wildlife. The statement given at Appendix-II gives particulars of the number of cattle permitted each year in the forest of this Division. The grazing incidence which is arrived at by dividing the total extent of forests open to grazing by the number of cattle will give not a correct picture as most of this cattle seldom go beyond the lower reaches of the hills which means the intensity of grazing is severe.

97. *Animals.*—Wild elephants cause damage in the rubber plantations and in young regeneration areas where kumri crops are raised. Bamboo patches are their main target. Wild boars also are harmful to younger regeneration. Porcupines, monkeys and rodents consume large quantities of fruits and seeds in sholas and minimise possibilities of regeneration of the species.

98. *Insects.*—The defoliators (Hyblaea puera) and skelettenisers (Hopalia machaeralis) of teak causes some damage to the teak plantations. Termites attacks small seedlings and saplings in the nursery and in the plantations. The damage its severe in drier regions and this is minimised by application of 25 gms. of 10 per cent Heptchalor aldrin or chlordane into the pit just before planting.

99. *Man.*—Man is mainly responsible for the destruction of forests through illicit removal of timber, fuel, bamboos and other forest produce. Smuggling of timber in the neighbourhood of forest areas in Kanyakumari district has been well organised and developed into a fine art. Hill-tribes cause damage to the forests by felling, lopping and burning down valuable trees for practising shifting cultivation. In this they are helped by the people from the plains who cultivate these lands in the name of these hill-tribes who are called Kanis. Encroachments for cultivation in Kanyakumari district cause the most serious damage to the forests. The encroachers unscrupulously destroy the existing growth including very valuable trees which are even burnt down where there is no change to smuggle them out.

100. *Injurious plants.*—Grass is injurious on accont of the enhanced fire risk and is directly harmful in removing nutrition and mositure from the surface soil and also preventing direct access of seeds of economic aspecies to the ground.

101. Lantana, Euphatorium and Strobilanthus are widespread and invade large areas.

102. Creepers and climbers are destructive in regeneration areas as they smother the young plants and constrict the bigger ones and thereby check their growth sometimes causing large scale failure. The most harmful are Pterolobium indicum-Acaca Instsia Acacia concinna, Acacia pinnata and Ziziphus Caesalpinea mimo soides.

Section 3—Short note on Wild Life

103. Wildlife in general in this Division has been disturbed and thrown out of its nabitat. Its number is also very much reduced by human interference by way of construction of hydel projects and large scale conversion of natural forests into rubber and softwood plantations. Poachning and poisoning have accounted of reduction in number of animals like Tiger, Panther, Black buck and Deer. Inspite of this still a considerable variety of wildlife can be seen in this division.

104. *Animals, Primates.* The Bonnet Macaque (Macaca radiata (Geoffroy) is a medium sized long tailed Macaque. A bonnet of hairs radiates in all directions from a whorl on its crown. The hairs covering the forehead are short and parted in the centre. The coat of the Bonnet Macaque in the cold weather is usually lustrous olive-brown; the underpaths are whitish and in the hot weather the coat loses its lustre and is a fuffy grey. It is found around villages and in open forests.

105. *The common Langur or Hanuman Money* (Presbytis entellus (Dufresne) : This is the long limbed, long tailed, blackfaced monkey, seen as such about towns and villages as in forests. Different races are found in the Himalayas, Peninsular and Southern India and Ceylon differing in size, heaviness of coast and details of colour. It is found in the ghat forests wherever Nilgiri Langur is met.

106. *The Nilgiris Langur* :—(Presbytis johni(Fishcher) This is a glossy black or blackish-brown langur with a yellowish brown head. The rump and base of tail are grizzled. Young are jet black. The Lion-tailed macaque which has almost the same distribution is also black, but is distinctive in its shorter tuft ended tail and the heavy facial tuft of long light hairs framing its face.

107. *The Slender Loris.*—(Loris tardigradus (Linnaeus) This animal is lean and lanky in apperance. The Limbs are longer and slender, the ears large, the snout pointed ; the eyes are close-set. The fur is soft woolly. Its colour varies from dark grey to earthy brown with an embellishment of silvery hairs, the lower parts always much paler. The dark spinal stripe is never strongly pronounced and is sometime absent. Eyes, circled with black or dark brown, Muzzle, white. It is met with in the Dry mixed deciduous fotests and is nocturnal. These are being caught for the supposed medicinal property they possess.

108. *Cats* : *Tiger* (*Panthera rigris* (*Linnaeus*).—The Indian Tiger is a rich-coloured well-striped animal with a short coat. Individual variation in colour, stripes and markings are great. Tigers are occassionally seen in Asambu and Veerapuli Reserved Forests in Kanyakumari.

109. *The Leopard or Panther* (Panthera pardus (Linnaeus). A Panther is a sleek short-haired animal with a fulvous or bright fulvous coat marked with small close-set black rostees. There is however considerable colour varioustion. It is comparatively more common and is found all over, even frequently forests adjoining crop fields.

110. *The Jungle Cat.*—(Felis chaus Guldenstred).—With its long legs and comparatively short tail the Jungle Cat has a very districtive apperance. It has plae green eyes. The colour of its fur varions from sandy grey to yellowish grey. The tail is ringed with black towards the end has a black tip. The paws are pale yellowish, black or sooty brown underneath. The ears are reddish ending in a small pencil or black hairs. The underside of the body is paler, with vestings of stripes on the underside and flanks. It is not common but found in open type of forests on elevations upto 600 metres.

111. *Civet.*—The small Indian Civet (Viverricula indica (Desmarest)—A tawny grey or greish brown animal, lines and streaked on black and croup ; spotted more or less in rows along the flanks. There are usually some cross bars on the neck. It is a fairly common animal anared in agricultural fields for collecting the exeretion called ' Pungu '.

112. *C. Mangooses.*—The Common Mangoose (Herpestes edwardsi (Geoffroy A tawny yellowish-grey mangoose with no stripe on the side of its neck. The alternate light and dark rings on its hairs gives its body, is tipped with white or yellowish-red, never black. It is very common and almost found all over except in sholas and very moist areas.

113. *The Jackal.* (Canis aureus Linnaeus).—The coat is a mixture of black and white washed with buff about the shoulders, ears, and legs. The Jackal's long -drawn oerie howling at dask or just before dawn is perhaps more familiar to most people, than the animal itself, It is common and faced throughout the plain forests.

114. *The Indian Fox.* Vulpes bengalensis (Shaw).—This is a common fox ; a pretty, slender-limbed animal, distinctive in black up to its tail. The backs of s ears are generally of the same tone as the head and nape. It is less common.

115. *The Dhole or Indian Wild Dog.* (Cuon alpinus (Pallas). Much like a domestic dog in general appearance, with the long lanky body of the wolf, but relatively shorter in leg and muzzle. The ears are more rounded at the tip and tail is quite bushy. Very distinctive is its red coat, which varies in tone with season and locality. Trans-Himalayan animals are paler, those from the Himalayas are a deeper red, in penisular India the coat takes on a tawnier tings. It is fairly common. Till recently they were considered as vermin.

116. *Bear.*—The Sloth Bear (Melursus ursinus (Shaw).—With its elongated muzzle, and lower lip, long unkempt hair and short hind legs, this is easily distinguishable. Most have a whitish V-shaped breast patch, and usually the muzzle and the tips of the feet are dirty white or yellowish. The claws, always longer on the fore-feet are ivory white. The coat may have a brownish tinge, more rarely it is wholly brown. It is found in secluded forests and frequent open forests for feeding.

117. *Otter.*—The Common Otter (Lutra Linnaeus).—It has a close coat o water proof fur ; a thick muscular tail, paddle like feet and brizzling rigid whiskers and has acquatic habits. Its main food is fish and dishing Clubs have therefore declared this as a vermin. It had been shot as it was considered a vermin. They are now found in hill rivers and in Kodayar Dam fringes.

118. *Squirrels.*—The large Brown Flying Squirrel P.P. Phyllippensis (Elliot .— It has a bright chest nut or bay coloured coat and salmon buff underparts. In it summer coat this beautiful squirrel has a bright yellow line down the middle of its deep maroon coat. The body is always darker than the parachute ; tail black tipped under parts rufous. They are rare and found in the forests around the Kodayar and Sangaltheri.

119. *The Indian Giant Squirrel* (Ratufa indica).—It has a body one and a half feet long with a tail of 2 feet with a deep brown and buff coloured coat. It is very common and found in moist deciducus and shola forests wherever there is continuous aereal routes.

120. *The Indian Procunine* (Hystrix indica Kerr).—Percupines are recognized by their hair, modified into spines. Other rodents have spines, but never so long or formidable. Its neck and shoulders are crowned with a crest of bristles 6 to 12 inches long. The quills on the back are very profuse. Here the under-armature short thick qualls are more or loss hidden by a bristling mantle of longer and thinner spines. Each quill is ornamented with deep brown or black and white rings. The white "rattiling quills" on the tail are large and open. It is very common being noctural in habits not seen in the day time but its evidence are common almost everywhere.

121. *The Indian Hare* (Lepus nigricollis F. Cuvier).—The Block-naped Hare (L.n. nigri collis) is distinctive in having a dark brown or black patch on the back of its neck from the ears to the shoulder, upper surface of tail is black. it is common and natural. It is most commonly seen by headlights in open grassy areas.

122. *Elephant.*—The Indian Elephant (Elephans maximus Linnaeus).—The trunk, curious denitition and great size are distinctive characters.

123. Generally only the males have large tusks. The tusks of females scarcely proterude. It is found in moist deciduous and shola forest types.

124. *Wild Cattle.*—The Gaur, or Indian Bison (Bosecaurus H. Smith).—With its huge head, deep massive body, and sturdy limbs the Gaur is easily distinguished. Very striking in the Gaur is the middle of the back where it ends in an abrupt dip. A newly born Gaur is a light golden-yellow which soon changes to fawn, then to light brown, and then to coffee or reddish brown, the colour of young bulls and cows. Old bulls are jet black, their bodies almost hairless with ashy forehead and yellowish or white-stockinged feet. It is found in the moist deciduous and shola forests.

125. *Goat.*—The Nilgiris Tahr (He mitragus hylocrius) Ogilby).—The Nilgiris Tahr is characterised by short scrips coat, the rounded outer surface of its horns, and the presence of only a single pair of teats.

126. The general colour of the animal is a dark yellowish brown, paler on the under surface. Does and young bucks are grey. With age the bucks-get a very deep brown almost, black, coat with a distinctive light "saddle patch" on the lions. From a distance the saddle looks almost white'. In build, bucks are far heavier and stockier than the does.

127. The horns, almost in contact at the base, rise parallel for some length, then diverge and curve downwards in a bold sweep and are deeply wrinkled. It is found in precipitous rock faces, especially 'variattu mottai' near winch Point.

128. *Deer.*—The Sambar (Corvus unicolor Kerr).—The typical forest deer has coarse and shaggy coat. In stages it forms a mane about the neck and throat. In the hot weather much of the hair is shed. The general colour is brown with a yellowish or greyish tings. The under-parts are paler. Females are lighter in tone. Old stages tend to become very dark, almost black. The antlers are stout and rugged. The brow tine is set at an acute angle with the beam. At its summit, the beam forks into two nearly equal tines. In some heads the outer and in others the inner tine is longer. The full number of points are developed in the fourth year. It is seen in hill forests.

129. *The Muntisc or Barking Deer* (Muntiacus muntiak Ximmermam).—The antlers are small consisting of a short brow-tine and an unbracnched beam and are set on bony hair covered pedicels which extend down each side of the face as bony ridges, hence the name Rib faced Deer. In does tufts or bristly hair replace the horns. Old males are browner in colour. The upper caninas of the males are well developed and are used by the animal in self-defence. It is seen in moist deciduous forests.

130. *The Indian Chevrotain or Mouse-Deer* (Tragulus momminna) (Frxleben).—The Indian Chevrotain or Mouse-Deer is a tiny little creature with very slander limbs and high hindquarters. Because of its small size, shy habits, and very protective colouring it easily escapes observation. Its coat is olive-brow minutely speckled with yellow. The flanks are marked with rows of buff or white spots which elongate and pass into longitudinal bands. The lower parts are white. The throat has three white stripes. It has three chambered stomach and tusks. it is more common in the interior velleys and rivulets.

131. *The Indian Wild Boar* (Sus scrofa cristatus Linnaeous).—The colour of the animal is black mixed with grey, rusty brown and white hairs. The young are browner and old boards greyer. New born wild pigs are brown with light or black stripes. The tushes are well developed in the males. Both the upper and lower tushes curve outwards and project from the mouth. Being prolific it is found almost in all types of forests in ghats.

132. *The Indian Pangolin* (Manis Crassiccaudata Gray).—The most ditinc tive character of a pangolin in its armour of protecting scales. The upper part of the head, the back and sides of the body, the whole tail, and the outside the limbs are covered with large over-lapping scales. In defence the animal curls itself into an armoured ball, exhibiting an encromous muscular power which drefies any ordinary attempt to unroll it. The scales of the pangolin may be regarded as hairs or rather spines enormouly enlarged and flattered. It is not generally found but leaves its trails on the forest paths.

133. *Birds.*—This division contains a variety of **Avifauna.**

The birds commonly seen in deciduous forests are listed below:—

Serial number and common name. (1)	*Scientific name.* (2)
1 The Tree Pie	Dentrocitta vagabunda (Latham)
2 The Jungle Sabbler	Turdoides straiatus (Dumont)
3 The Gold fronted Cholropsis	Chloropsis aurifrons (Te mminck)
4 The Redvented Bulbul ..	Pycnonotus cafer (Linnaeus)
5 The Indian Robin	Saxicoloides fulicate (Linnaeus)
6 The Magpie-Robin	Copaychus saularia (Linnaeus)
7 The Grey Shrike	Lanitus excubior (Linnaeus)
8 The Black Drongo	Dicrurus adsimilis (Bochstein)
9 The Ashy Wren Warbler ..	Prinia Socialis Sykes
10 The Golden oriole	Oriolus oriolus (Linnaeus)
11 The Brahminy Myna	Sturnus pagodarum (Cmelin)
12 The Grey Wagtail	Motacilla caspica (Cmelin)
13 The Large Pied Wagtail ..	Motacilla Maderaspatensis (Cmelin)
14 The Black bellied Finch lark ..	Eremopterix grisea (Scopoli)
15 The pruple Sunbird	Nectarinia asiatica (Latham)
16 The Pied Crested Cuckoo ..	Clamator jacobinus (Boddaert)
17 The Crow Pheasant	Centropus sinonsis (Stephones)
18 The Alexandrine Parakeet ..	Psittacula eupatria (Linneaus)
19 The Roseringed Parakeet ..	Psittacula eupatria (Linnaous)
20 The Roller	Coracias benghalensis (Linnaeus)
21 The Common Kingfisher ..	Alcedo arthis (Linnaeus)
22 The Palm Swift	Cypsiurus parvus (Linnaeus)
23 The Spotted Owlet	Athene brama (Temminck)
24 The Crested Serpent Eagle ..	Spilornis cheela (Latham)
25 The Brahminy Kite	Haliastur indus (Boddaert)
26 The Common Parish Kite ..	Milvus Kigrans (Beddaert)
27 The Blackwinged Kite ..	Elanus caeroluc..s (Desfontains)
28 The Common Green Pigeon	Green Treron Phoenicoptera (Latham)
29 The Spotted Dove	Streptopelia chinensis (Scopoli)
30 The Little Brown Dove ..	Streptopelia senogalensis (Linnaeus)
31 The Common or Grey Quail	Coturnix coturnix (Linnacus)
32 The Grey Patridge	Francolinus pondicerianus (Gmelin)
33 The Redwattled Lapwinf ..	Vanellus indicus (Boddaert)

134. The birds seen in evergreen forests are:—

Serial number and common name. (1)	*Scientific name* (2)
1 Laughing Thrush	Garrulax jerdoni
2 Mountain thrush	Zoothere dauma
3 Large Woodshrike	Tephrodormis virgatus
4 Fairy Blue Bird	Irene puella
5 Yellow backed sunbird ..	Aethogya siparaja
6 Malabar Golden backed Woodpecker.	Dinopium javanese
7 Heart spotted Woodpecker ..	Hemicircus canente
8 Malabar Great Black Wood-pecker.	Dryocopus javansis
9 Nilgiris Speckled Piculet ..	Picumnus innominatus
10 Blue beared Bee eater ..	Nyctyornis atherioni

135. *Water Birds.*—There are quite a number of tanks and a few reservoirs within the division and the harbour a variety of water birds. These birds are seen mostly during the period January to June. They are listed below:—

Serial number and common name.	Scientific name.
(1)	(2)
1 Spotted billed or Grey Pelican	Pelecanus philippensis (Cmelin)
2 Little Cormorant	Phalacrocorax niger (Vieillot)
3 Darter or Snake-bird	Anhinga rufa (Daudin)
4 Spoon bill	Platalea leucorodia (Linnaeus)
5 Little Egret	Egret garzetta (Linnaeus)
6 Grey Heron	Ardea cinerea Linnaeus
7 Cattle Egret	Bubulous ibis (Linnaeus)
8 Paddy Bird or Pond Heron ..	Ardeola grayil (Sykes)
9 White Strok	Ciconia ciconia (Linnaeus)
10 Painted Stork	Ibis leucocephalus (Pennant)
11 Flamingo	Phoenicopterus rosus (Pallas)
12 Cotton Teal	Nettapus coromandelianus (Cmelin)
13 Little G ebe or Dabchick ..	Podicops ruficollis (Pallas)
14 Common Teal ..	Anas crecca (Linnaeus)

CHAPTER III.

UTILISATION OF THE FOREST PRODUCE.

Section 1—Agricultural customs and wants of the population.

136. Agriculture is the chief occupation of rhe people in this Division. Paddy, Tapioca, Coconut and Aracanut are the important. Plantation of coffee, teak, pepper, rubber and plantains occur in hill slopes. Almost every bit of land is capable of yielding some crops orother in Kanyakumari district because of the favourable rainfall. Land holding seems to be concentrated in the hands of a few rich and the majority of the people seem poor.

137. Many small scale forest based industries are in the division viz., saw milling furniture making, etc., There is a paper mill in Chermahdevi. There is a Chip, board manufacturing unit in Rajapalayam for which raw material is supplied from this division.

138. *Wants of the People.*—The requirements of the people are :

(i) Timber for construction, industry and export;

(ii) Small timber for building and agricultural implements.

(iii) Fuel for domestic consumption and cottage tndustries like Jaggery ..aking and kilns;

(iv) Softwood for Match Industry and Chip Board Industries;

(v) Bamboos and reeds for local consumption and for paper Mill;

(vi) Thorns, for fence; :

(vii) Manure leaves ;

(viii) Thatch grass ;

(ix) Palmyrah for its multifarious uses and

(x) Pasture for cattle.

139. *Timber.*—The demand for timber is mostly for house construction and furniture making. The species sought after is Teak, Rosewood, Terminalia paniculata crniculata and Tomentosa, Artocarpus hirsuta, Lagerstroemia lanceolata, Adina Tordifolia, Mangifera indica etc., TANSI and Fisheries Departments require timber. the formersundertake manufacture of furniture and other household articles and rhe fisheries department for making of catamarans. The fisheries department equire Bombax malabaricum, Aianthus malabaricum and Albieia falcata for their purpose whereas the TANSI is particular about teak and rosewood only. Furniture making and manufacture of wooden casings for wall plugs, switch boards and orher accessories required for electrical fittings flourish especially in Nagercoil. For this took log of small girth and even crooked billets and top-ands are in demand. For export, big size logs free rom defects of Dalbergia latifolia are sought after and they fetch very high prices.

140. *Small Timber.*—There is demand for small timber for construction of houses in the villages and for making agricultural implements. For this purpose small size logs of teak, terminalia tomentoss, Pterocarpus marsupium, terminalia paniculata, Artocarpaus intergrigolia and bamboos are used. For agricultural implements certain species are favoured. The following list shows rhe species in demand for different implements.

Plough share:—Mesua ferrea, Grewia tilieofolia and teak.

Hanale—Teak.

Yoke.—Pterocarpus marsupium, Adina cordifolia, Terminalia panieulata, gmelina arborea and Teak.

Baulks.—Hardwickia binata, Palaquim ellipticum, Acrocarpus fraxinifolius.

Spokes.—Albiania lebbeck, Albizzaia, odeoratissina, Teak and Grewia tilisafolia.

Felloes.—Teak.

Wheel box.—Chloroxyl on swietania, Acacia arabica, Hardwickia binata

Shafts.—Palaquim ellipticum, Hardwickia binata.

141. *Fuel*—Fuel is in great demand in Nagercoil. The demand from villages and rural areas is comparatively less as they manage mainly with palmyrah,cotton, castor, cowdung cakes and brushwood of different species found in the wasteland.

142. *Softwood*.—There is demand for Albizzia falcata for making catamarans and dug-cuts for use by the fisherman. The matchwood industry needs the wood of Bombax malabaricum, albizzia falcata,Melia dubia, etc. The needs of this important matchwood industry could not be met adequately. Of ate, for manufacture of Chip Board cala.r.m, there is a demand for certain specific species like Cullania excelsa, calophylum, Hyristica and Eugenia.

143. *Bamboos*.—Bamboos is in great demand for its multivarious uses. It is also utilised by the Paper Mill at Cheranmahadevi but its availability is very limited and is confined to Kiamalai and Veerapulli Reserved Forests i Kanyakumari district.

144. *Reeds*.—Reeds are utilised by the Paper Mill at Cheranmahadevi and to a certain extent, their requirements are not with from the forests in the higher reaches of the western ghats.

145 *Manureleaf*—The Manure leaf demand from Agriculturists is great and it is partially met by the issue of permits for removal from the forests on payment of seigniorage. The principal species are Eupatorium, Mundulia suberosa, Holarrhina antidysentrica, Calatropis gigantia, etc. but lopping of some tree species like lannea grandis, Ailamthus, Emblica, Azadirachta indica, etc. is also common.

146. *Minor Forest Produce*.—The main items of Minor Forest Produce are Honey, Tamarind, Cardamom, Myrobolan, Canes, etc. Rattan is utilised for furniture making and basket weaving locally and the balance is sent outside the division. Cardamim is raised indisde the forests in various lease units and is sent outside the district for sale.

Particulars of revenue realised are given in Appendix III.

147. *Grazing*.—As is common to the rest of the country the grazing demands for most of the useless scrub cattle is great. The grazing incidence is very heavy especially in easily accessible forest areas adjoining villages. Crazing is regulated by issue of permits and by prohibiting grazing in young regeneration areas and areas wilfully burnt by graiers. But these restrictions are not really effective.

148. Particulars of cattles and revenue realised is given in Appendix No. IV.

Section 2—Markets and Marketable Produce :

149. *timber* :—Teak and Roserwood are the two timber species which have rhe greatest demand. Reserved logs of girth 1.85 m. girth and over without any major defects are considered to be of shipment quality and attract buyers from the west coast who export them abroad where they produce decorative vensors. Apart from these two other species such Terminalia paniculate, Terminalia tomentosa, Lageratroemia lanc clate, Grewia tilliaefolia, Artocarpusshirsuts and Afbiggia edoratissima have good demand. The numerous timber depots at Nagercoil cater to the local demands and also supply the demands of the near by districts either as logs or as sawn sizes.

150. *Softwood.*—Melia dubia, Albizzia falcata and Albizzia stipulata are in great demand for cateamarans. Further, Marcth Splint Industry utilises Ailanthus malabarica, Alstonia, scholaria and Albizzia falcats. The demand is more rhan the supply which is absorbed locally.

151. *Fuel and Small timber.*—All the fuel and small timber produce in the division are disposed of locally in the rural areas and in the towns like Nagercoil The fuel demand of the people are mets not only from the Forest but also from private forests.

152. *Bomboos.*—Very little bamboo occures in Tirunelveli district and rhe major portion of the requirements of the people are met from Kanyakumari forests. There is no surplus for taking outside the division.

153. *Rattan.*—Large quantities of rattan are collected from Singampatti, Kalakad and Veerapuli Reserved Forests and about half the quantity is consumed locally for furniture making and baskets. Manufacrured articles as well as raw ratten are ratten are exported outside the division expecially to Tiruchi, Madras and sCoimbaore.

154. *Reeds.*—The reeds occurring in Kulasekaram, Ashagiapandipuram and Nanguneri ranges are exploited and utilised by M/s. Sun Paper Mills at Cheranmahadevi.

155. *Minor Forest Produce.*—The Minor Forest Produce collected in the division is mostly absorted locally. Cardamom is exported to Bodinayakanur for sale.

Section 3—Lines of Export :

156. The division is well connected with an excellent not work of the roads maintained by Highways Department.

Railways.—The rail routes passing through this Division are

(1) Kanyakumari ro Trivandrum .. Broad gauge.

(2) Kanyakumari to Tirunelveli (via) Nagercoil .. Broad gauge.

Forest Roads.—Forest produce is usually transported from the Forest along rough fair weather cart tracks to the main public roads leading to important markets.

Section 4—Method of Exploitation and Cost :

157. *Timber.*—Timber extraction is done in Alagiapandipuram and Kulasekaram ranges. The softwood plantations which are the following are clearfolled. In teak plantations thinning materials is put for sale. No teak plantation was folled till now as the plantations are not yet matture.

PRESENT CLASSIFICATION TIMBER IN METRIC SYSTEM.

Species.		*Length in metesr.:*	*Girth in centimetres.:*	*Remarks.*
(1)		(2)	(3)	(4)
Teakwood and Reserved—				
AL	I	5.00 and above	150 and above	Straight and without defects.
AL	II	Do.	120 to 149 ..	Do.
AL	III	Do.	90 to 119 ..	Do.
AS	.	.. Below 2.00 but not less than 2.50	150 and above	Do.

Specias. (1)		Length in metres.: (2)	Girth in centimretres. (3)	Remarks. (4)
AS	II	.. Do.	120 to 149 ..	Do.
AS	III	.. Do.	90 to 119 ..	Do.
B	I	.. 2.50 and above.	1.50 and above..	Fairly straight and with minor defects.
B	II	.. Do.	120 to 149	Do.
B	III	.. Do.	90 to 119 ..	Do.
C	I	.. Do. ..	150 and above ..	Crooked defective or hollow.
C	II	.. Do.	120 to 149 ..	Do.
C	III	.. Do. ..	90 to 119 ..	Do.
SL	I	.. Below 2.50 but less than 1.00.	90 and above ..	....
SL	II	.. Below 2.50 ..	60 to 89 ..	....
Teakpoles and Rosewood —				
TPL	I	.. 3.00 and above...	75 to 89 ..	....
	II	.. Do.	60 to 74 ..	....
	III	.. Do. ..	45 to 50 ..	....
	IV	.. Do. ..	30 to 44 ..	....
TPM	I	.. 6.00 to 8.95 ..	75 to 89 ..	....
	II	.. Do. ..	60 to 74 ..	....
	III	.. Do. ..	45 to 59 ..	....
	IV	.. Do. ..	40 to 44 ..	....
TPS	I	.. 3.00 to 5.95 ..	75 to 89 ..	....
	II	.. Do.	60 to 74 ..	....
	III	.. Do. ..	45 to 59 ..	....
	IV	.. Do.	30 to 44 ..	....
TPUS	..	.. All length ..	Below 30 ..	....
Miscellaneous species—				
..	I	.. 2.60 and above.	125 and above ..	....
	II	.. Do.	Below 125 ..	....
SL	..	.. Below 2.50 ..	90 and above ..	....

Section 5—Past and Current Prices :

158. Year after year the prices of all Forest produce have increased along with the increased cost of living. Details are furnished in Appendix No. 5.

CHAPTER-IV

STAFF AND LABOUR SUPPLY

159. The establishment of the division is furnished in the following statements.

Serial number and name of category. (1)	*Total.* (2)	*Permanent.* (3)	*Temporary.* (4)
1 District Forest Officer	1	1	1
2 Forest Rangers	7	4	3
3 Foresters	20	14	6
4 Forest-Guards	47	41	6
5 Forest Watchers	33	..	33
6 Lorry Driver	3	3	..
7 Lorry Cleaner	3	3	..
8 Jeep Driver	1	1	..
9 Draughtsman Grade III	2	2	..
10 Superintendent	1	1	..
11 Assistant	3	3	..
12 Junior Assistant	14	9	5
13 Typist	1	1	..
14 Steno-Typist	1	1	..
15 Tally Clerk	2	..	2
16 Office Assistants	6	6	..
17 Office Watcher	1	1	..

STATEMENT SHOWING THE ESTABLISHMENT IN KULASEKARAM RANGE.

Serial number and name of post. (1)	*Permanent.* (2)	*Temporary.* (3)	*Total.* (4)
1 Forest Ranger	1	..	1
2 Forester (Kulasekaram Section)	1	..	1
3 Forester (Kalial Section)	1	..	1
4 Forester (Lwer Kodayar)	..	1	1
5 Special duty Forester	1	..	1
6 Forest-Guards	15	3	18
7 Forest Watchers	..	5	5
8 Junior Assistant	1	1	2
9 Office Assistant	..	1	1
10 Lorry Driver	..	1	1
11 Lorry Cleaner	..	1	1
Total	20	13	33

STATEMENT SHOWING THE STAFF IN THE OFFICE OF THE ASSISTANT CONSERVATOR OF FORESTS, FOREST PROTECTION SQUAD.

Serial number and designation.	*Permanent.*	*Temporary.*	*Total.*
(1)	(2)	(3)	(4)
1 Assistat Conservator of Forests	1	..	1
2 Forest Range Officer	1	..	1
3 Forester	2	..	2
4 Forest-Guard	4	..	4
5 Junior Assistant	1	..	1
6 Typist	1	..	1
7 Jeep Driver	1	..	1
8 Office Assistant	2	..	2
Total ..	13	..	13

STAFF PARTICULARS IN GLOVES DIVISION, NAGERCOIL.

Permanent Establishment :

Divisional Forest Officer	1

Temporary Establishment :

S.G. Assistant	1
Junior Assistants	2
Assistant	1
Junior Drafting Officer	1
Office Assistants	2
Office Watcher	1
Rangers	2
Foresters	4
Forest-Watcher	1
Jeep Driver	1
Lorry Driver	1
Lorry Cleaner	1
Tractor Driver	1
Tractor Cleaner	1

Section 2—Labour Supply :

160. In General there is no difficulty in getting unskilled labour for departmental work. Labour availability is scarce when the season for agriculture operation is in peak. For extractions of timber skilled labour is available in the villages close to the forest. For some other forestry operations like planting, etc., the labours are taken from the plains.

161. The wages paid to the labourers are governed by the Public Works Department and forest schedule of rates.

CHAPTER V.

PAST SYSTEM OF MANAGEMENT AND THEIR RESULTS.

Section 1—History of Kanyakumari District :

162. Kanyakumari, the southern most districts of Tamil Nadu was came into existence in 1956 when the States were re-organised on linguistic basis. Formerly it formed part of Travancore-Cochin State.

163. There are many legends in circulation that Kanyakumari was reclaimed out of sea by Lord Parasurama.

164. If one browses through history, he can find that the earliest dynasty which ruled the present area of Kanyakumari district, then known in different names such as Nanjilnadu, Edanadu, etc., was the Ayis dynasty. The Ayis were the contemporary of Asoka which becomes cheear from an Asokan Edict which records the Ayis along wirh the Cholas, Pandyas and Cheras as his powerful neighbours in the South.

165. It is also said that the earliest rulers of Kanyakumari were the Pandyas from whom the Ayis captured the faviltory.

166. The important rulers of the Ayis dynasty were :—

(1) Ayi Andiran (Sono date between 96 AD to 140 AD).

(2) Titiyan

(3) Pothiayt chelvan.

(4) Atikan.

167. After the Ayis, the Naneil Poruvan also is said to have ruled this country (3rd century AP).

The Ayis dynasty was followed by the *Early Pandyas.*

The important Early Pandya rulers who ruled this part were :—

	AD.
(1) Kadungon	590—620
2) Maravarman Avanisulamaki	620—645
(3) Sevdan	645—670
(4) Arikesai Maravarman	670—710
(5) Kachchadayau	710—740
(6) Maravarman Rajasimtha	740—765
(7) Jatila Parentake Neduncheziyan	765—815
(8) Sri Mara Sri Vaketta	815—862
(9) Varaguva Varman	862—880
(10) Parantaka Viranarayanan	880—900
(11) Mona Varman Rajasimha II	900—920

168. From the Early Pandyas, the Kanyakumari district along with other Pandyee country was conquered by the Choas. Raja Raja Chola gured prominently in the history of Kanyakumari district. His son and successor Rajendra Chola left the Kanyakumari and its surrounding in-charge of the 'Chola-Pandy-Victroy's The important Choa Pandya Victroys. who were connected with the history of Kanyakumari district were :—

(1) Jatavarma Sundarachola Pandya.

(2) Jatavarvan Idiyar Sri Chola Pandya.

169. This viceregal system was abolished by the Chola ruler Kulotunga-I who took direct responsibility.

170. But during his rule, *Parantaka Pandya*, a section of Pandya dynasty, recovered Pandinadu and Kanyakumari ftom the Cholas, and consolidated his position as the ruler of Pandinadu and Kanyakumari district area.

171. It is also said during this period (12th century) One Nancinkuravan had ruled this area

172. Following the rule of Nancilkuravan, the Venadkings began to influence their suremacy over Kanyakumari district area.

The important Venad Kings were :—

(1) Kodai Kerala Varma.

(2) Sri Usa Ravi Varma.

(3) Udayamarthanda Varama

(4) Chera Udaya Marthanda Varma (1383—1444).

(5) Sakala Kala Marthander Varma (1406 AD)

(6.) Bhuthala Srivira Udaya Morthandu (1516 AD).

173. During the rule of Buhtha Sir Vira Marthanda Varma, there arose conflict between Vijayanagar and Venad Kingdoms. The Venad had to incur heavy loss due to the frequent invasions of the Vijayanagar rulers. The important Vijayanagar generals who led the expedition against Venad was Vithaler.

174. After the disintegration of Vijayanagar Kindgom, the Royal representatives of this Kingdom at Madurai changed their royalty to the Central Government and founded Madurai Nayakdom. The Madurai Nayaks also continued to fight with their neighbours, the Venad rulers. Hence the Nanjilnadu a portion of present Kanyakumari district had been the bone of contention between the Nayaks and the Venad rulers. Many serious battles had been fought in the places now under Kanyakumari District. The important Nayak invasion against the Venad rulers occurred during the reign of Thirumalai Nayak and Rani Mangammal. Adding fuel to the fire besides the Nayaks, Chanda Sakib also invaded Venad.

MODERN PERIOD.

175. The Modern history of Kanyakumari district starts with the reign of Balu Marthanda Varma (1729—1758 AD). He was a great conquerer and organiser. It was during his period, the Kingdom of Travancore was dedicated to the Lord Padmanaba and henceforth the rulers were called as 'Tiruvadis' (Sacred feet) which means that they were always at the sacred feet of Lord Padmanabhaswamy.

Successors of Marthanda Varma .

(1) Rama Varama Karthigai Thirunal—1758—1798 AD

(2) Bala Rama Varma 1798—1810.

(3) Rani Gauri Laxhmi Bai 1811—1815.

(4) Rani Gauri Bharvathi Bai 1815—1829.

(5) Rama Varma Swathi Thirunal 1829—1847.

(6) Marthanda Varma Utharan Thirunal 1847—1860.

(7) Ramavarma Aylyan Thirunal 1860—1880.

(8) Rama Varma Visakami Thirunal 1880—1885.

(9) Sri Madam Thirunal 1885—1924.

(10) Regent Sethu Lakshmi Bai 1924—1932.

(11) Rama Varma Sri Chithrai Thirunal 1932—1947.

176. At the had of the abule successors of Marthanda Varma Travancore continued to make speay progress. The important referms were—

(1) Effective centralisation of royal authority.

(2) Abolition of Devadasi system.

(3) Prohibition of animal sacrifices

(4) Kothayar Project.

(5) Irrigation projects.

(6) Steps towards representative Government.

(7) Creation of 'Devaswom' Board.

177. These rulers were ably helped by Dewans or Chief Ministers. The important Dewans were, Velu Thambi, Madhava Rao, Col. Munro, Sir C.P. Ramaswamy Ayyar and others. The strugglers all over India to oust the British from India had its echo in Kanyakumari District also. There were uprising everywhere for the formation of a responsible Government. It was Velu Thambi who sowed the seed for it.

178. India became independent on 15th August 1947. After a brief period hesitation Travancore jointed the Indian Union and following that on Ist September 1949 the Cochin-Travancore State was intgerated with the Maharaja of Travancore as 'Raj Pramukh'

179. The four southern taluks of Travancore (ie) Agastheeswaram, Kalkulam, Vilavancode and Thovala were mostly pre-occupied with the Tamil speaking people. They formed a minority in the Travancore-Cochin State. So they under the leadership of Nesamony and others fought for their separation from Travancore-Cochin State and merger with Madras State (Now Tamil Nadu). When the States were reorganised in 1956 on the linguistic basis, their grievance was rederessed by forming Kanyakumari district out of the four taluks and merging them with the then Madras State. Thus was formed the present Kanyakumari district in 1956.

Section 2—History of the Forest in Kanyakumari District.

180. As a result of state reorganisation, the four Tamil taluks, namely Vilavancode, Kalkulam, Agastheeswaram and Thovala were transferred to then Madras State and formed into a separate District known as the Kanyakumari Distrtic with effect from Ist November 1956. In these four taluks lie the three forest ranges of Kulasekaram, Alagiapandupuram and Boothapandi. From ancient times these transferred areas were better known as Nanjanad and Edanade the former consisting of Agastheeswaram and Thovala taluks and the latter Kalkulam and Vilavancode taluks. This tract had the benefit of the earliest irrigation projects like Pandyan Dam, Puthan Dam(1970)Pechiparai Dam (1907) supplemented by Perunchani (1953) Vast areas of this tract is under paddy cultivation and their prosperity depends on the regulated supply of water to the above mentioned reservoirs which are fed by Paraliar, Kodayar and the Palayar all having their source in the reserved forest.

181. Till the beginning of the 19th century, the requirement of the forest produce was not much and teak was the only monopoly timber in the Travancore State. People were free to fell and remove all other species of timber except teak and they had to pay a nominal river duty when the timber was transported by water. In 1944 blackwood (Dalbergis latifolia) and Anjini (Artocarpus hirsuta) were also declared monopolies; and ebony and sandalwood were later on added to the list.

182. Travancore had exported timber and other produce to foreign countries rfom very remote times. The earliest customers were the Chinese, the Arabs, the Romans. Subsequently the Danes, the Portuguese, Dutch, the French and the English succeeded one after another in capturing the market in Travancore. In the middle of 19th century monopolies were multiplied till almost all important articles were engrossed by the system. Pepper, Cardamom, Ginger, Copra, Chinnamom, Arecanuts, Turmeric, Salt, Coir, Tobacco, Cotton, Teak, Blackwood, Sandalwood and numerous other articles were brought and sold by the Silk to derive revenues. There were large ware houses run by the state and customs Chowkis were installed at places on the frontiers.

183. *Origin of the monopolies* : An important characreristic of the early trade of Travancore was the right on monopoly the State exercised over several of its produce.The rulers of Travancore owned the idea of monopoly to the Dutch East India Company who impelled by the anxiety to remain masters of the pepper trade in Malabar introduced the system of monopoly into the country. Dai Jong, Commandant of Cochin in 1757 pointed out that hire system did not exist before the advent of the Dutch. The Portuguese obtained it from the Rajahs, who acted only as brokers between the growers and the Portuguese. Where competition between European nations arose in the papper trade, monopol ies were introduced, but such a power did not exist in the laws of Cheraman Perurmal, by which the rulers of Malabar are bound, and from which they cannot devoiate, without the consent of their subjects. Though unsupported by sanctions, the system of monopoly was continued by every ruler who had occasion to wield power as it definitely worked to his adventage. Gradually the monopoly right over several articles were relinquished with the currency of free trade.

184. *Forests and early history* : In the early days the lands under forests were more extensive than they are now. The growth of population and the resulting demand for more land for cultivation were responsible for reducing the forest to its present area. With the increasing pressure of forests and the necessity for the consideration of forest, conservancy was realised by the Government over since the time of Dewan Sri M. Madhava Rao. With this object in view, between the years 1883 and 1893, Government passed a series of orders prohibiting the clearing felling and burning of forests.Upto 1893 there was no Forest Act as such in this area. Whatever Rules where there, on the subject of Forests Conservancy there were scattered in so many proclamations, notifications and circulars that it was not possible to make the public aware of these rules. Moreover those rules had no penalties attached to them and forest offences used to be punished under old regulation of 1835 of Travancore State. With the passing of the Madras Forest Act of 1882 it was felt that better provision for the protection and management of the valuable timber forests was necessary.Accordingly in April 1984 the Travancore State Government appointed a Committee to consider and report on the Forest Administration in the State and its defects and to submit their proposals for its improvement. After holding a number of sittings and taking evidence from a number of witnesser the committee submitted their report in July 1884, and a Draft Regulation was prepared on the lines of the Madras Forest Act of 1882. In 1893 the first Forest Regulation of Travancore was passed into law. Till then forest land was being freely granted for permanent cultivation and it was different to get convirtion of persons accused of forest offences. This regulation of 1893 had been in force till it was substituted by an Act almost similar and known as the Travancore Cochin Forest Act 1952 as a result of the intergration of Cochin State in 1948.

185. *General* : On account of the large demand of Teak from foreign markets the Travancore forests attracted the attention of the Timber trade from very early times. However since the forests of Kanyakumari District which supported comparatively less teak and of poorer quality than the west coast, no serious attention was bestowed on them till about 1915 although the question of exploiting these forests was considered eversince 1890 on account of the large demand for junglewood and ecergreen timber for local use in Nanjiland. It was only in 1896 that steps were taken to constitute some of the forests into reserves ; before that these forests like most other forests of state remained in a state of being nobody's or rather

everybody's property. The extraction of timber from these forests passed through different stages from that olden days when each man cut and utillsed whatever he wanted, Government levying a nominal fee for every tree known as Kuttikanam and finally to the present system of extraction of timber by Government agency and sale in Government deposts. A simple into the past working of the forests may be obtained from the following extract taken taken from Mr. Bourdillon's report.

186. "At the beginning of 1884, system as suggested by Forest Commission was introduced. Previously anyone who wanted timber other than the royalties and anywhere but near Shencottah had been able to obtain permits at the rate of one rupee per log under which they were allowed to fell and remove the timber at their pleasure. Very little supervision was exercised over these people, the only check on smuggling being the watch stations which were dotted along the rivers and road, sides but if the permit holders could escape these, they could smuggle as they pleased. Many of the watchers of the watch stations made good income by pasising timber without entering it in their registers". Thus by paying a nominal Kuttikanam people helped themselves to maximum removal of timber. Mal-practices were so notorious and so flagrant that Forest Commission recommended that the depot system should be introduced and all timber of whatever kind should be brought to the depots for sale. This change however did not bring the desired result in that the villagers had to go a long way off to the Government Depot to get the timber which often did not serve their purposes and in that the felling contractor did as much mischief as the permit hloders under the Kuttikanam system. Ans therefore in 1889 the depot system was abolished and the old seigaiorage system wa reintroduced.

187. The seigniorage system and the depot system went on simultaneously or replacing one another till 1902 when the former was finally abolished with the provision that permits for quantities not exceeding 25 candies could be issued for bonafided omestic use to persons residing close to the Forests and far away from the depots. As the work by the felling contractors continued to be unsatisfactory, in 1900 rules were passed fixing minimum girth for trees to be felled requiring the marking of trees in localised areas, before felling. By that time all the easily workable portions of these forests were heavily cut particularly those species like Teak, Rosewood, Pterocarpus marsupium, Terminalia tomentosa, Hopea parviflora and Artccarpus hirsuta which were greatly in demand. Under these rules extraction was continued up to 1914 in Veerapuli Working Circle ; and the annual extraction was about 50,000 cubic feet.

188. *Workings Plan.*—Although a working plan was first concaved by Mr. Murno, the Conservator of Forests as early as in 1825, the idea forming regular working plans did not materialise till 1900, when Mr. Bourdillin ordered the drawing on the simple working schemes on a rotation of 6 years. These scheme only served to localise feelings in a compact area. They did not visualise a regulated system or take into account the silviculture requirement. These schemes did not work satisfactorily, as coupes opened on 6 years rotation were found too large to be exploited in one year. In the Forest Conference held in 1918, it was resolved that the preparation of further working plans on an elaborate scale was not necessary in view of the incomplete and unrealiable data available then and that preparation of simple working schemes was sufficient.

189. The first attempt at systematic working of the forests was made in 1918, with the preparation of the working scheme by Mr. M. P. Jacob. The tract now in Kulasekaram and Alagiapandipuram ranges was included in the Veerapuli working circle, with the object of meeting the demand for timber of Nagercoil market. For convenience, Jacob divided the working circle into 19 annual cuopes (i.e.) 19 years being the felling cycle. An area of 7 square miles of submergible portion in Pechipara reservoir was treated as a separate coupe, which was being exploited at the time of preparation of the working plan. In Jacob's plan only about 35 percent of the total forest area was prescribed as available for exploitations the remaining area being situated in inaccessible localities. In revising Jacob's report, Sri Narayana Iyengar had proposed some more areas and brought the available exploitable area to about 30 per cent of the rotal area of the reserves, thereby anticipating better yield and higher revnue. He also realised that the demand for firewood for the

increasing population of Nanjiland had not been given due consideration by Jacob, and therefore suggested opening of a fuel series. Ultimately in 1918 when Jacob's plan was approved by the Government, the following modifications were made :—

(1) As large quantity of timber extracted from Pechiparai submergible areal was lying undisposed in depots, it was considered not to work the annual coupes in the year as prescribed by Jacob.

(2) The exploitable girth was raised to 72 inches in the case of all species except Artocarpus hirusta, Hopea parviflora, Salmalia malabarica, for which 80 inches was prescribed ; and the minimum girth for Crewia tilaefolia, Anogeissus latifolia, Bridelia retusa was fixed as 40 inches.

(3) Jacob's proposal to embark on planting teak on a large scale in Paraliar Valley was considered inexpedient and only 750 acres were set apart for carrying out these planting programme at the rate of 50 acres each year.

(4) As Jacob proposed large areas to be clearfelled and planted with teak annually, he did not make separate provision to meet the demand for firewood. But in view of the restriction placed in modification (3) above, separate coupes had to be prescribed for fuel supply. Accordingly about 3,375 acres in Veerapuli reserve were allotted to a fuel working circle known as Thadikarankonam fuel series to be worked on a rotation of 25 years, under the coppice with standard system. The concession of free removal of manure leaves and agricultural implements, enjoyed by the villagers of Nanjiland was to be continued to this Fuel Working Circle.

(5) To repair the dame done by fire in about 35 square miles of Veerapuli reserve intended for timber extraction, more intensive system of culturals operations such as sowing and planting was suggested.

190. *Results of the working scheme.*—The working scheme was to have come into force in 1918 according to the prescriptions, but on account of various reasons like further amendment, delay in approval of the scheme and dull market conditions, the first coupe was taken up for extraction in 1921 and the exploitations of different coupes, not in a systematic order-continued up to 1947. Out of the 19 coupes in the series, some had been worked once while some other coupes very easily accessible have been gone over again and again. Never was the work in any coupe completed within the stipulated period of one year. The method of working was to select the easily accessible coupes and to work them for those species of timber commanding a ready sale, without paying attention to the prescriptions of the plan. Improvement feelings and cultural operations were thoroughly ignored. In gaps created by selection feelings grass came up and caused fires. The results of such haphazard work is the present poor stocking and the resulting trmendous woody climbers entwining the trees. Much of the submerged area of Perunchani reservoir also came under this series and so large scale extraction of timber and firewood from the submergible portions was undertaken since 1948. Besides timber, the top ends of the feelings were collected and sold to agriculturists at cost price. Though P. T. Davassy in 1953 drew up a working plan, it was neither approved nor enforced. So the position regarding selection feeling coupes till the end of 1956 when these areas were transferred to Madras State continued to be what has been described above.

WORKING PLAN OF THADIKARANKONAM FUEL WORKING CIRCLE

191. As the working plan of Jacob did not take adequate provision to meet the fuel demand from Nagercoil Narayana Iyengar prepared this plan in 1918, the object being to supply firewood to Nagercoil. The area of this series is 3,375 acres and lees on either side of rhe Thadikarankonam Balamore Road and is within 12 to 18 miles distance from Nagercoil. The silvicultural system prescribed was coppice with standards the number of standards to be left being well formed poles of valuable species, with a rotation of 25 years, 25 coupes were indicated.

192. *Results of the Working Plan.*—The first 22 coupes were worked durings the years 1916 to 1927. Standards were marked and the remaining growrh was sold standing to the Contractor. The working was reviewed in 1930 and the following observations made.

193. The method of coppice with standards is not suited to this area. This systemshas ruined rhe growing stock in the first 11 copues. All good treesshave been felled, leaving inferior once as standards and that in much less number rhan prescribed. Coppice shoots were very unsatisfactory. The coppice shoots in coupe I to IV were better than in subsequent coupes as coppicing in copues I to IV was done departmentally. Moreover much damage was caused to the standard during the cclone of 1926. The severe annual fires also account for the dearth of regeneration in folled coupes. The result is that there willsnot be much to exploit during the next rotation. The refrsion to selection felling was strongly advised Thiswould mean rhat the suimpleworking scheme of Narayana Iyengar has to be. cancelled. The problem of fuel supply to Nagercoil is to be tackled by issuing permits toremove th top ends of trees felled by Contractors. The first 11 coupes we e worked inregular sequence: But after that the order of working had to be reversed and the coupes were worked backward from the last coupe. After the first 11 coupes the system adopted was selection feeling, by which, marked trees are sold standing. Although under selection felling system,sonly marketable and sound tree were felled, leaving dead, defective and inferior species it was considered by the Divisional Forest Officer in 1893 that the selection system was decidedly an improvement over the coppice with standards or simple coppice system prescribed by Narayana Iyenger. The remaining coupes were worked after the Manipatti bridge was constructed in 1935 and the last coupe viz., coupe No. XII in the series was worked in 1940. After rhat according to the working Plan coupe I had to be gone over again, but it contained very few exploitable trees and rherefore in 1941 it was decided to start teak plantation in this are commencing from Coupe I. 10.75 acres out of Coupe I were demacrated and sold standing at Rs. 225.00 per acre. Thus the planting of Teak was started in Alagiaapndipuram Range. Another important prescription of Narayana Iyengar which was ignored was regarding the exploitation of bamboos from these fuel copues. As the indiscriminate collection of bamboos by permit system has ruined the bamboo stock, the plan prescribed that all clumps in the fuel coupe, should be felled departmentally one year before the working of the coupe for fuel and the material sold either in the forest or in the sale depot. But this was never carried out.

194. *Mahendragiri Fuel Coupes.*—The eastern slopes of Mahendragiri reserve facing Panakudi and Aramboli contain predominantly fuel species like Acaci Planifrons, Tamarind Acacia sundra, Aobizzia amara. About 25 years back attempts were made to sell fuel coupes the system adopted being coppice with standards. The price offered were very low owing to the following reasons :

(1) The reservation of good fuel species as standards restricted the yield from the coupes.

(2) The excise or export duty payable to Travancore State Government as the produce has necessarily to be taken to the nearest market which is in Madras State. The contractors detested this system particularly the various formalities to be undergone to satisfy the export rules.

(3) Another obstale in their way was the lack of proper outlet to the felled produce which has to be carried through private lands in Madras State.

195. When it was pointed out that the retention of standards was unnecessary, the District Forest Officer observed in 1933, that there is no harm in keeping a few standards and their number per acre needsnot be much". Thus excepting the first two coupes, no other coupe of Mahendragiri fuel series was sold after 1927. In 1942 the third coupe in the series was sold for Rs. 18 per acre. The coupe was to be clearfelled with the objects of doing 'Rab' regeneration and a start was made in the regeneration of fuel species in Mahendragiri. But this work was discontinued for some unknown reasons.

196. *Bamboos.*—The extraction of bamboosfrom the reserves of Kanyakumari have been far from satisfactory, as the system followed is one of cutting and removal by the consumers and purchasers on payament of prescribed seigniorages fees.

Section 3—Past System of Management and their Result.

197. *Plantation in Kanyakumari Forests.*—Towards close of 1904 Malayalam Era (1919) the Conservatorsof Forests, Travancore S ate adumbreateb scheme by which it was proposed to plant up 640 acres eve y year Accordingly sites for planting were selected but the scheme did not work well. In 1920 the idea of raising

teak plantations under taungya system was conceived. The first plantation of 34 acres in Paraliar was raised under this me hod in 1921. The planting was continued in pite of failures now and then, the cause for failure being unsuitable site, difficuly of procuring reliable taungyadras and labourers and advrse weather conditionts These also account for the break in planting programme and the large variations in the annual area planted. Under this Taungya metl od not only were all works, such as clearing, burning, aligning and planting, weeding replacing casualties etc., upto the, the time when. . the plants are about 2 years old in the field were carried out by taungyards at their own cost, but a premium also was paid by them to the Government. A list of plantations now existing is given in Chapter III of Part II. Some of the plantations of Manalodai and Paraliar series were submerged under Perunchani reservoir and had to be clearfelled before submersion. After the transfer of this area to Madras State on Ist November 1956, regeneration areas of 1957 and 1968 in Chellanthurai (Paraliar series), Thadikarankonam and Kodayar (in Thodalikad) have been raised. The escapement is 6 feet by 6 feet.

198. *Thinning of Teak Plantations.*—It is seen that no systematic thinnings were done in the plantations. Whatever thinning was done, has been rather haphazard without following any schedule of thinnings as shown by the fact that some plantations have received thinnings in successive years or all plantations were thinned in the same year.

199. *Conclusions.* Past exoerience of raising plantations by depending too much on taungyadars has shown that :

(1) Entrusting all works to taungyadars, of course, under the departmental supervision, is not conductive to attain good results though this method may be cheaper.

(2) The taungyadar's primary interest is on his field crop and therefore except burning all other items of work are invariably delayed to suit his convenience. And the need to strictly adhere to the planting schedule need not be ever-emphasised.

(3) The taungyadar raised tapioca and other species which suppress teak plants and it is difficult to prevent his from doing this.

200. *Other plantations—Sandal.*—In 1914 some Forest Officer planted two sandal seedlings near the checking station at Thadikarankonam. By 1918 their number rose to six. In 1925 there were six plants within the watch station compound and 18 in the premises of subordinate quarters. The result of enumeration in 1929 was gratifying, as this species had spread over 50 acres of waste land near the checking station. There were 400 trees and 700 saplings besides a large number of seedlings. In Kannupally and Sooravalli too sandal occurred naturally but in small numbers. In 1937 the District Forest Office rwanted to do sandal propagation Kannupalli and Sooravalli in Mahendragiri reserve as well as in Thadikarankonam. The method suggested was dibbling of seeds collected from Anjanas Range. But strangely enough when it was tried to extend it by means, artificial r o; e of the seeds germinated. "There was no mistake in the seeds no anything in sowing", but the continued drought that followed is said to have caused this failure. Again in 1941, dibbling of seeds both local as well as those from Anjanad were tried in Thadikarankonam and Sooravalli. The result was agair a failure. No more attempts at sandal propagation appears to have been made af er.

201. *Cashew.*—In 1936-37, cashew planting was tried in two plots situated in Tekkumalai reserves. The area selected contained fairly good growth of natural Odai. Cashew seeds were dibbled in $1\frac{1}{2}' \times 1\frac{1}{2}' \times 1\frac{1}{2}'$ sized pits. The germination was good and the first year stocking was 75 percent. But with the setting in o summer only a few plants survived and these two died subsequently. No, further attempts seem to have been made. The failure appears to be due to the following reasons (1) wrong selection of site especially in an area occupied by Acacia plani frons, while cashew does not tolerate competition ; (2) no mosisture conservation technique was adopted in this dry tract ; (3) this reserve had been the grazing ground for thousands of goats owned by villagers around Aramboli.

202. *Beedi leaves (Diospyros melanoxylon).*—About $1\frac{1}{2}$ pounds of these seeds recived from Hyderabad were dibbled in Thadikarankonam and in the Range Office compound at Aramboli in 1941 in pits of 6" diameter at an espacement of 20'. The plants came up well particularly in Thadikarankonam. As this species sends root suckers, its natural regeneration through root suckers was encouraged by exposing the roots by a narrow trench. Further two acres were dibbled with seeds from

Hyderabad in 1942 and the species were raised by taungya method. About 80 percent stocking was obtained at the end of this season. These two plantations were pollarded in 1950. Though this species which is indigenous to dry tracts of Decan comes up well, it is highly doubtful if good beedi leaves could be obtained and sold from this locality. The beedi manufacturers appeared to have reject this locally grown leaves, because the best leaves imported from Deccan are pluked in cold weather and dried under shade in open air. The trees should be pruned sufficiently ahead of collecting leaves. There should be no rains during the collecting and drying seasons. All these conditions are not met in Kanyakumari district and it is good that further planting of this species has been given up.

203. *Manure leaf species.*—Pongamia glabra, Poinciana elata, Thespesia populnea and Neem were planted in the Range compounds at Aramboli and Azhapandipuram in 1942. And these have come up well and fetched good revenue as leases of manure leaf.

204. *Regeneration of fuel species.*—In 1947 about 4 acres of felled coupe of Mahendrgiri fuel series were selected for the experiment of raising fuel species. In July, 11 feet wide strips were made along contours. The strips were cleared of all grass and the soil was hoed. Seeeds of Acacia aeabica, Sapindus, Red sander Acacia planifrons were dibbled. Except Acacia arabica and a few Red sanders none of the species came up.

205. *Albizzia moluccana.*—The species was tried in 1942 and again near Thadikarankonam in 1954. This comes up well and is a much sought after timber for catamarans. It is also known to be a good plywood species. Regeneration of this species is prescribed in the softwood plantation schemes.

206. *Red sanders : Pterocarpus santalinus.*—In 1949 a small nursery was opened with Pterocarpus santalinus seeds. The germination was profuse, but most of the seedlings were damaged by wild elephants. The remaining seedlings were tended properly and two acres of the failed portion of 1946 Teak plantation were planted with these seedlings. These plants have come up well and now these are in pole stage.

207. *Prosopis juliflora.*—Dibbling Prosopis juliflora was tried at different pots in Thekkumalai during 1950. Very few seedlings survived.

208. *Lac cultivation.*—Lac cultivation was undertaken as an experiment in Kulasekaram Range during 1938-39. Three manunds of brood lac from namkum was brought and infected on the Schleichera trijuga (Poovam) trees. The result was encourgaging and so it was continued on a large scale in the following year. Trees on the road sides and river banks gave better yield than those inside the rserve. In 1940 the forest department took over 179 Poovam trees standing on the banks of Thambaraparani (in Kuzhithurai) 12 trees infected with 462½ pounds of brood lac yielded 270 pounds of good brood lac. This brood was again infected on 26 trees. The lac operations were continued as shown in paragraph No. 2 under the lac working circle.

209. In 1938 a small scale experiment was done by the Range Officer, Azhagipandipuram. He got half a manund of brood lac from Kulasekaram Range and infected it on 9 Poovam trees. There were heavy rains at the time of infection and also strong winds. These two factoris were responsible for the failure of the experiment.

210. *Matchwood plantation.*—In 1958 in Kulasekaram Range two bits 60 and 40 acres respectively were taken up and planted with seedlings of Salmalaj malabarica. For want of sufficient seedlings, direct sowing was also tried. The 40 acres plot near Kilikonam failed for want of attention and also due to Kanis' interference. The stocking in the 60 acres plot near Pechiparai is about 50 percent, though the plants aer suppressed by tapioca raised by the Kanis.

211. In 1958-59, Salmalia malabarica and Ailanthus malabarica were raised as a mixture in two plots. The first plot is 124 acres in area and is situated adjacent to Myloni Estate. The other plot is 78 acres in Azhagipandipuram Rangesituated ust above the Masipatti bridge in a Kani abandoned area.

THIRU RAHAMATULLAH'S PLAN PROPOSALS—IMPLEMENTATION AND RESULT.

212. *General.*—From the year 1959-60 the forests in this Division have been managed as per the Working Plan prescriptions of Thiru S. A. Rahmatullah, who analysed the earlier working of these forests under different working plans and drew conclusions based on which he prescribed the constitution of 13 working circles which coverefed the entire area of this division. Some deviations have been sanctioned by the Chief Conservator of Forests and some special works have also been undertaken outside the plan prescriptions, necessita ed by the policy changes and quick development programmes.

213. *Timber Selection Working Circle.*—This working circle covered all exploitable moist deciduous forests of Kilamalai, Veerapuli, Velimalai and Asambu proposed Reserve of Kanyakumari district which were not included for conversion into teak and matchwood.

214. The areas in Kanyakumari district were exploited under selection working circle during the years 1921-1947 and the plan prescriptions were not followed and accessible areas were gone over more than once. Improved fellings and cultural operations were ignored, so in gaps grass camp up and was then subject to fire. The haphazard working resulted in poor stocking in accessible areas.

215. Thiru S. A. Rahmatullah prescribed the working of the above areas under selection working dividing into 3 felling series namely Kulasekaram, Alagiapandipuram and Sengaltheri whereby only matured trees of selected species over a minimum prescribed girth limit were to be removed with a felling cycle of 15 years and yield was regulated on area basis.

216. However no working has been under taken as large stock of timber had accumulated in Nagercoil due to large scale clearfelling work done for raising rubber plantations, outside the presriptions of the plan, and diviation was sanctioned in Chief Conservator's No. D.Dis. 5(753/68, dated 24th November 1958.

217. *Teak Plantation Working Circle.*—The working circle consisted of the then existing teak plantations in Veerapuli reserve as well as areas considered suitable for conversion into teak plantations, situated in the outer and lower fringes of Veerapuli, Kilamalai and Velimalai reserves apart from Asambu proposed Reserve and Thudalikadu unreserve. The natural forest taken for conversion into teak plantations were the deciduous Forests.

218. The working circle was divided into 3 felling series, namely Thadikarankonam series, Paraliar series and Kodayar series.

219. The Thadikarankonam series comprised of 132.11 ha. planted in Azhagiapandiapuram Range during the period 1942 to 1946 and 1958 and areas suitable for planting in Veerapuli, Velimalai and Asambu. Plantations were raised in this series till 1969 but not in the areas prescribed and later because areas had to be found for the extension of rubber plantations the areas were diverted for the purpose and planting was done. In Velimalai from 1970 and till 1972—860.71 ha. have been planted.

220. The Paraliar series included 230.99 ha. of plantations raised earlier and 482.66 ha. during the period 1959-1972 making a total of 717.65 ha.

221. In the newly formed Kodayar series 691.85 ha. were planted during the period.

222. The silvicultural system adopted was clearfelling followed by concentrated regeneration with Teak. The rotation tentatively fixed was 40 years hoping that the final crop will attain an average girth of 45 inches, with proviso to examine it at the end of 40 years and increase it to 80 years if growth is better. It was suggested that the final rotation may be decided after 20 years based on the statistics gatheredat the proposed research centre at Thadikarankonam.

223. The plantations were raised mostly under Taungya and they raised mainly tapioca and the lease period was two years. It was suggested to plant Dalbergia latifolia ' on the periphery of the regeneration area.

224. Subsidiary silvicultural operations like first year tending, weeding, cutting back and tending in second and third years were prescribed.

225' The thinning cycle was at ages 6, 12, 19, 29 and the final thinning in the 40th year to be decided at that time.

226. The teak plantations excepting a few are not as promising as they should be considering the locality factors. Keeping the area free from weeds and climbers which impose the growth has not been given due attention, whether raised under kumri or not. The kumridars after benefiting fully from the lease leave the area without clearing the unwanted growth. Further there is a tendency for them to to prune the branches and leaves of teak. The kumridar pays more attention to his crop than teak with the result teak gets suppressed. As soon as the kumri crops removed suddenly weeds and climbers come in which will have to be removed periodically to keep the plants in hygienic condition. The thinning regime has to vary according to the growrh rate of the plantation as one of the plantations are found to be congested in spite of thinnings carried out.

227. *Faggot Wood Working Circle.*—The villagers of Kanyakumari district living near forests have been accustomed to remove head loads of faggot wood from the Government forests. To discourage this practice and to have a smooth change over to eventual complete discontinuance, a faggot wood working circle was formed in the lower fringes of Mahendragiri, Thadagamalai and Velimalai reserve forests from where the villagers can get their requirements of fuel. Incidentally the stocking in these areas could be improved by coppicing the existing the growth and restocking it artificially with better species. The prescription of this working circle were not followed. The Government have discontinued the system of the free removal of firewood and faggot wood from the Reserved Forests of Kanyakumari district with effect from1st April 1964 in the interestsof forest conservancy vide G. O. Ms. No. 1020, dated 26th March 1983. So the faggot wood working circle has been deleted.

228. *Softwood working circle.*—The Working circle included all the areas which have been hitherto planted with matchwood and the areas supporting natural Forest and fit for matchwood. The areas selected for conversion mostly contained secondary growth in moist deciduous type, the original having been cleaned by the planters in the past for coffee cultivation and areas abandoned by the kanis after shifting cultivation. One felling series in Veerapuli Reserved Forest was formed to plant up 150 acres yearly. Most of the areas suitable for softwood were also fit for rubber and teak. Because rubber and teak has to be given priority, the area left behind was limited, so it was proposed to take up some of the later coupes out of areas included in teak conversion circle and plant them with Matchwood, so that by the time that area comes for planting of teak, the matchwood plantation would have reached exploitable age. Another series was to be formed in Karadikulam forest if experimental plantation raised was successful.

229. The species suggested to be planted were Ailanthus malabaricum, Salmalia malabaricum, Sterculia compenulata, Melia dubia and Albizzia moluccana.

230. The espacement adopted was 11' X 11'. The silvicultural system adopted was clearfelling followed by artificial regeneration and the rotation was fixed as 25 years expecting to get reds of atleast 60" girth as final crop.

231. Till 1973—384.14 ha., were planted in Veerapuli series. Karadikulam series was given up after experimentation as the soil was not suitable and the rainfall inadequate. But another series is Balamore was opened in 1965, with 25 ha, as annual target and 251.17 ha., have been planted till 1973. The list of plantations can be seen in Chapter on softwood Working Circle in Part II.

232. Kumari cultivation was allowed for 3 years. Tapioca has suppressed the plants and when the kumridar vacated there were dense masses of climbers and shrubs strangling the planted species. During 1966 inter planting with Eucalyptus grandis was done on 1960, 1962 and 1963 plantations, which was not successful having been covered up by fast growing softwood species. In certain cases replacement of casualities has been done with the same species. Albizza molucana has done much better than the other species.

233. *Lac Working Circle.*—Prior to the current plantation of Lac cultivation was restricted to scattered patches of Kusum trees outside the reserves. The occurance of large number of trees in the Veerapuli reserves and along Balamore Road, (a large number of trees over 60″ in girth and young saplings also found) led to the formation of a lac working circle in this area annexing some porambokes also and called Thadikarankonam Farm. This was divided into 4 blocks for the usual operations. Artificial regeneration in compact areas and tending of advance growth was also suggested.

234. Accordingly lac cultivation was done till 1966-67, Planatations were raised in Kulasikaram and Alagiapandipuram Ranges and as well as in Singampatti forests and the results were not encouraging.

235. *Bamboo Working Circle.*—The Bamboo working circle comprised of all the bamboo bearing area Kanyamkumari forests overlapping selection and teak plantation working ciycle. The most common bamboo is Bambusa arudinacea. The working circle was divided into 3 series and a felling cycle of 3 years was adopted andthe yield was regulated by area, each series being divided into 3 coupes. The coupe not sold in a particular year was sold in next year. One cycle was completed in the 3 series and thereafter the demand potered out as the area under Bamboo got reduced having been converted to rubber, teak or softwood plantations. Later because of the gregarious flowering of bamboos during 1960-61, the bamboo coupes were closed upto 1971-72. Then the Chief Conservator of Forests permitted to work one bamboo coupe in each of the two ranges, one after the other from 1971-72. Accordingly the whole Alagaiapandipuram Range was sold as one unit in 1971-72 and the Kulasekaram Range in 1972-73.

Y.S. Kadakshamani's Plan of Tirunelveli South Forest Division (1976-77 *to* 1985-86) *Implementation and Result :—*

236. *General.*—Thiru Y.S. Kadakshamani wrote the working Plan for Tirunelveli South Forest Division which consist of, part of present Tirunelveli Division. Kanyakumati Division works formed with effect from 1st April 1977 with Headquarters at Nagercoil in accordance with G.O. Ms. No. 961, dated 26th March 1977. The proposal given by Thiru Y.S. Kadakshamani also covers part of Tirunelveli Division. Thiru Y.S. Kadakshamani has proposed the following working circles :—

237. *Teak Working Circle.*—The Working Circle consisted of the then existing Teak Plantation of 2136.7 hectare. The Teak Plantation was divided in two Plantation series namely Alagiapandipuram and Kulasekaram series. Alagiapandipuram series consists of 1393.9 hectare and Kulasekaram series consist of 742.8 Hectare of Teak Plantation. No fresh plantation was proposed during 1978-79. The total of 93.10 hectare of Teak Plantation was raised in this Division.

The Silviculture system adopted was Clearfelling system. The rotation was tentatively fixed as 80 years. Because the non-availability of sufficient data the growth of Teak Plantation could not be just as the Research Centre at Thadikarankonam has not got the details of girth and height increments Because most of the plantation make confirmed to All India IV Quality Teak Plantation. Therefore the rotation was fixed as 80 years. During the plan period no Teak Plantation was due for folling.

The thinning was preseribed at 6, 12, 20, 30 and final thinning at 40 years. The first thinning prescribed by mechanical and the rest as silviculture thinning with C Grade thinning. The thinning was carried out all though in many cases not as per the prescription. It was delayed because of financial reasons. The thinned material was sold in public auction.

238. *Softwood Working Circle.*—The working circle included all the areas which have been planted with Albizzia falcata, Ailcanthus excelsa, Bombax malabaricum, Ceiba pentendra etc. The total area under this working circle was 1255.3 and until 1990, 1069.4 hectare plantation was proposed for planting under Softwood working circle. But till 1968 only 374.36 hectare plantantaion

was tackled. Albizzia falcata Plantation were felled at 10 year rotation. Many plantations had not been felled as per the prescription. The reasons seems to be delay in approving the papers by Government. Therefore there is backlock of older plantation. Some of these plantations were raised by Kumri cultivation. Kumridar has raised tapioca and was allowed for three years. In beginning tapioca was suppressed the plants and the kumridar vacated. There has been thence mass of climbers and scrubs. The rotation fixed for Bombax ceiba is 35 years and no Plantation of Bombax ceiba was due for felling during the plan period.

239. *Working for the Fuel Working Circle.*—This working circle was discontinued in confermity with the order of the Government in their Letter No. 13010/FR/V/77-1, Forest and Fisheries Department, dated 22nd March 1977 and communicated in Chief Conservator's Roc. No. 26807/77-C, dated 1st April 1977.

240. *Teri Forest Working Circle.*—The whole area covered under this working circle now comes under the Tirunelveli Division.

241. *Bamboo Working Circle.*—The Bamboo working circle comprised of all the Bamboo bearing areas in Kanyakumari Forest Division. Most common Bamboo is Bamboosa bamboo. The working rcircle are divided into one felling series having 3 coupes. The silviculture system of selection thinning of clumps consists of removal of individual mature clumps in accordance with felling rules. The Bamboo coupes were allotted to Sheshayee Paper Mill, Pallipalayam and Fisherman Co-operative Society, Kanyakumari as per the Government orders. No fresh Plantation was proposed and carried out.

242. *Reafforestation working Circle.*—The whole area covered under this working circle now comes under the Tirunelveli Division.

243. *Minor Forest Produce Working Circle.*—This working circle includes of the reserves and on reserves of this Division. On the main item of Minor Forest Produce collected are reeds, rattons, gallnut, Tamarindus, Avaram bark, Manure leaf, etc. Lease period was fixed from 1st July to 30th June. The right to collect Minor Forest Produce was sold in public auction. Ivory and deer, horns were to be collected departmentally.

244. *Grazing Working Circle.*—This working circle consisted of all the areas throughout the division with the exception of those areas closed to grazing was silviculture reasons. All the Plantations were closed to grazing for the period of 5 years from the year of formation. The whole division formed one grazing unit and accordingly grazing permit was valid for the whole division. Penning was permitted on certain regulation. Kanis were given 3 grazing permit for their own cattle. Grazing year was from 1st July to the succeeding 30th of June.

245. *Result.*—The closure to grazing of young regeneration has helped the plantation. But the damage due to Wildlife particularly Sambars in softwood plantation is quite conspicuous.

CHAPTER—VI.

STATISTICS OF GROWTH AND YIELD.

Section 1.—Enumeration, Stock Maps etc.—

246. *Evergreen Forests.*—The only big timber available in this Division is evergreen timber. Since trees in evergreen forests have partcularly no break in the growing season and no annual rings are present. The statistics of growth and yield therefore can be collected only by measurements of sample plots or trees over a period of years. In the absence of evergreen plantations of known age in the Division, the collections of reliable statistics is not possible. During the year 1972 Thiru M. Dinakaran carried Forest Resources Survey of Kanyakumari Division. The survey was carried out adopting 1 per cent line plot method each plot being of 1 hectare extent. The distribution pattern of the trees in various girth classess was carried out for Thadagamalai, Poigaimalai, Nilgiri, Asambu, Velimalai, Veerapuli and Kilamalai R.F. After that no revision work has been taken up. The Forest Rsources Survey Report is available.

Section 2.—Statistics relating to growth of Teak.—

247. Teak planting was started in Kanyakumari District in 1921, as an experiment and was continued till 1979. But the planting has not been done systematically as the annual plantation area varies from 2 hectare to 100 hectare. In certain years there had been no plantation also. Thus the plantation of all aged gradation are not available. Further some plantations have been congested for want of timely thinning. While some have received heavier thinning. Therefore there is a wide variation in the girth and height increment of the plantation.

248. The following statement shows relationship between age and girth of artifically raised plantation in different localities. The 10 per cent random sample plots were done in these plantation to find out the girth and height measurements. The result is furnished below:

Serial number.	*Year of Planatation.*	*Age of Plant.*	*Location.*	*Average girth in. cm.*	*Average height in. cm.*
(1)	(2)	(3)	(4)	(5)	(6)
			KULASEKARAM RANGE		
1	1946	41 years	Veerapuli R.F.	93.4	15.87
2	1958	29 years	Thadalikadu	50.32	4.67
3	1963	24 years	Kilamalai R.F.	75.12	15.72
4	1968	19 years	Kilamalai R.F.	43.3	10.12
5	1973	14 years	Kilamalai RF	59.07	14.51
6	1978	9 years	Veerapuli RF	28.79	7.66
			ALAGIAPANDIPURAM RANGE		
1	1921	66 years	Veerapuli RF	116.90	16.51
2	1926	61 years	Veerapuli RF	95.02	15.23
3	1932	55 years	Veerapuli RF	95.34	15.87
4	1946	41 years	Veerapuli RF	67.21	[illegible]
5	1958	29 years	Veerapuli RF	55.88	12.39

Section 3—Statistics relating to growth of Albizzia falcata:—

249. Albizzia falcata has been artificially raised in Kanyakumari Division. But there is a wide variation in girth and height within the same plantation. The random sapl- plot was carried out in few plantations. The girth and height measurements are furnished below:—

KULASEKARAM RANGE

Serial number.	*Year of Planration.*	*Age of Plantation.*	*Average girth in cm.*	*Average height in Mts.*
(1)	(2)	(3)	(4)	(5)
1	1977	10	55.20	14.05
2	1979	8	51.12	11.18
3	1981	6	30.02	5.15
4	1985	2	9.39	5.35

CHAPTER VII.

ESTIMATED CAPITAL VALUE OF FORESTS.

It is difficult to form an accurate estimate of the capital value of the forests since all the forest land was initially acquired by Government under Section 16 of the Forest Act. To find the estimated capital value of forests both intangible service products and tangible service products has to be taken into consideration. In intangible service products the protective services of trees depend on three main features which are possessed by trees and vegetation which together create the environment of the forests."

(1) Their physical form and bulk including the net work of their roots.

(2) Their mode of living by absorbing water from the soil and transpiring it into the air.

(3) The character of decaying litter from leaves and branches used on the surface soil with it mingles.

251. Forests provides many social benefit which grow importance with urbanization, improved transport, higher standard of living and general pressure on the land. The forests indirectly give service in employment, recreation and scientific study. The employment generated is not merely for those working in the forests themselves but also for those in the industries and trades dependent on forests. Forests also provide opportunities for biological study of natural fauna and flora, of soils and hydrology.

252. The barrier formed by trees and their understorey also reduces the velocity of wind. A succession of belts can afford great protection from high velocity winds and also provide shade thus providing a service which is invaluable for agriculture and animal husbandry. The characteristics of trees and vegetation also affect the influence of rain and other precipitation.

253. In tangible services also, there is large array of material forest products or goods which range from all major products to minor products. To estimate the value of growing stock is also very difficult task as no records any yield tables are available. Even assessing the value of forest land is extremely difficult as it cannot be compared with the agricultural and other land available in the district.

254. A land value for the timber growing purposes does not have a separate and distinct marketable existence except wherethere is no or only a negligible amount of growing stock present. Where there is a substantial growing stock present, land and timber value are usually considered together although in many transaction a separate land value is assigned. Forest land has a value and the fact that it often does not have a separate and distinguishable market price. Therefore those intangible products frequently inter mingled with the production of tangible products in one and the same forests make it extremely difficult to assess the capital value of Kanyakumari Division is being mode here.

CAPITAL VALUE OF FORESTS.

Description.	*Area in ha.*	*Value per ha.*	*Amount.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)
		Rs.	Rs.	
1 Dense Forest ..	23,880.00	1,00,000	238,80,00,000.00	The rates adopted have been calculated in consultation with District Forest Officer and Range Officers of Kanyakumari Division.
2 Sparse Forest ..	5,375.00	20,000	10,75,00,000.00	
3 Teak Plantation ..	2,232.00	2,00,000	44,64,00,000.00	
4 Softwood Plantation	1,837.37	1,00,000	18,37,37,000.00	
5 Sheet Rock ..	150.00	..	..	
6 Rock	2,833.85	..	..	
7 Dense scrub ..	2,585.00	500	12,92,500.00	
8 Sparse scrub ..	1,268.85	200	2,53,600.00	
9 Grass land ..	158.02	100	15,800.00	
10 Depleted forest ..	500.00	50	25,000.00	
11 Buildings	..	..	3,96,127.87	
12 Roads	..	..	5,00,000.00	
13 Wells	..	..	5,936.98	
			312,81,25,964.85	

PART II,

CHAPTER I,

BASIS OF PROPOSALS.

255. *Resources Potential.*—In Kanyakumati Division, there are two important resources- one is human resource, i.e., the tribals living in 47 Kan settlements areas and the other important resource, is plant resource, i.e., Teak, Softwood, Bamboo, Minor Forest Produce etc. A third important resource, in the division is water resource, which has been almost completely tapped by Electricity board in upper and lower Kodayarhydro electric project. Electricity of 147.36 and 68.0 M.U. is being generated at Kodayar 1 and Kodayar 2. The objects of management are being formulated on the basis of availability of these resources.

Objects of Management :

General objects of management will be as follows :

(1) To improve the living conditions of tribals living in the divisions, by providing the basic amenities and schemes to build economic resources giving sustained income throughout the year.

(2) To cater to the requirement of local fisherman by providing Albizzia falcatoria logs for making the catamarams and to meet the needs of mat factories to the extent possible.

(3) To harvest the resources of the forest such as teak, softwood, Bamboo and reeds etc., on sound principles of silviculture.

(4) To protect and conserve the forests in the interests of soil conservation forest conservancy and wildlife conservation.

(5) To restore he degraded eco-system by planting suitable areas with fuel species and thereby meeting the fuelwood demands of the public to the extent possible.

(6) To provide grazing facilities to cattle that depend on the forests.

(7) To harvest the existing minor forest produce and

(8) To meet the demand of raw material to the forest based industries to

Section 2—Method of Treatment to be adopted.

256. The method of treatment to be adopted will be discussed in detail unde the respective working circles.

257. Areas not covered under any of the working circle will be brought undrr miscellaneous regulations.

Section 3—Working Circle and their construction.

258. Based on the objects of management state above, it is proposed to constitute the following working circles.

(1) Tribal resources (Kanis) Development working Circle.

(2) The teak Working Circle.

(3) The catamaram Working Circle.

(4) The Bamboo Working Circle.

(5) Eco-restoration Working Circle.

(6) Soil Conservation Working Circle.

(7) Grazing Working Circle.

(8) Wildlife Working Circle.

259. It is proposed to have a chapter on miscellaneous prescriptions to deal in the following matters.

(1) Minor Forest Produce.

(2) Fire protection.

(3) Buildings and Wells.

(4) Roads.

(5) Boundaries.

(6) Check-posts.

(7) Rain-gauge station.

(8) Jurisdictional changes.

(9) Control records and map.

(10) Communication and protection.

The following working circles of the current plan are being deleted for reasons entioned against each.

(1) Fuel Working Circles :

260. This working circle is discontinued due to depleted growing stock and also in conformity with Government orders comminicated in Letter No. 13010/FR/V-77-1 Forest and Fisheries Department dated 23rd March 1977.

(2) *Teri Forest Regeneration Working Circle* :

261. This is being deleted because these areas now come under the jurisdiction of Tirunelveli Forest Division.

(3) *Protection Working Circle* :

262. This is being dealt with under miscellaneous regulations.

Section 4 :

263. The working Plan is expected to be completed by March 1988. This working plan will be inforce for aperiod of 10 years from 1st April 1988 to 31st March 1998.

CHAPTER II

TEAK WORKING CIRCLE.

Section 1—General constitution of the working Circle and Character of the Vegetation:

264. *Objects of Management.*—The object of this working circle is just to manage profitably the existing teak plantations as no fresh planting of teak is proposed during this plan period.

265. *General constitution.*—The working circle consist of all the existing teak plantations in Kanyakumari Division.

Section 2 Division of the area :

Area.—The area of the working circle is 2,232.00 ha.

266. The working circle is divided into two series viz., Kulasekaram and Alagiapandipuram. Kulasekaram series will consist of all the plantations of Kulasekaram Range and Alagiapandipuram series will consist of the plantations of Alagiapandipuram and Boothapandi Ranges.

A detailed statement showing particulars of teak plantations is given below:—

LIST OF TEAK PLANTATION IN KULASEKARAM RANGE.

	Year. (1)	*Locality.* (2)	*Name of Plantation.* (3)	*Area.* (4)
1	1943	Veerapuli, R.F.	Manalodai	19.4
2	1946	Do.	Do.	23.5
3	1958	Thodalikadu R.F.	Kodayar R.A.	44.6
4	1959	Do.	Do.	39.7
5	1960	Kilamalai R.F.	Do.	49.4
6	1961	Do.	Do.	61.5
7	1962	Do.	Do.	69.2
8	1963	Do.	Do.	50.2
9	1964	Do.	Do.	55.9
10	1965	Do.	Do.	28.3
11	1966	Do.	Maruthamparai	34.0
12	1967	Kilamalai R. F. Bit I	Do.	
13	1967	Do. Bit II	Do	55.9
14	1968	Kilamalai R.F. 1 bit	Do.	48.3
15	1969	Do.	Do.	43.5
16	1970	Do.	Do.	41.1
17	1971	Do.	Do.	23.1
18	1972	Veerapuli R.F.	Paraliar Teak	17.4
19	1972	Kilamalai R.F.	Kodayar TRM	18.7
20	1973	Do.	Do.	19.2
21	1978	Thodalikadu PRF	1969 Softwood failure batch.	33.
22	1979	Do.	Do.	13·8
				789.90

LIST OF TEAK PLANTATION IN ALAGIAPANDIPURAM RANGE.

Serial number.	*Year of Plantation.*	*Name of the Plantation.*	*Area in hec.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)
1	1921	.. Paraliar Teak Plantation ..	13.80	..
2	1925	.. Do. ..	13.80	..
3	1926	.. Do.	24.30	..
4	1927	.. Paraliar Teak Plantation 2 bits	10.50	..
5	1931	.. Paraliar Teak Plantation 2 bits.	1.90	..
6	1932	.. Paraliar Teak Plantation 2 bits.	7.40	..
7	1933	.. Do. ..	5.10	..
8	1934	.. Do.	1.20	..
9	1935	.. Do. ..	4.50	..
10	1936	.. Do. ..	2.10	..
11	1937	.. Do. ..	2.60	..
12	1942	.. Thadikarankonam Teak R.A.	4.20	..
13	1943	.. Do.	10.10	..
14	1944	.. Do. ..	21.00	..
15	1945	.. Do. ..	24.00	..
16	1946	.. Do.	29.90	..
17	1954	.. Paraliar Teak R.A.	38.90	..
18	1957	.. Do. ..	49.40	..
19	1958	.. Do. ..	10.50	..
20	1958	.. Thadikarankonam Teak R.A.	42.90	..
21	1959	.. Do. ..	39.70	..
22	1959	.. Paraliar	70.80	..
23	1960	.. Do. ..	51.00	..
24	1960	.. Thadikarankonam	54.20	..
25	1961	.. Do. ..	21.40	..
26	1961	.. Paraliar	28.70	..
27	1962	.. Do.	28.30	..
28	1962	.. Thadikarankonam	29.50	..
29	1963	.. Kalkulam Block I	48.50	..
30	1963	.. Kalkulam Block II	44.50	..
31	1963	.. Paraliar	26.70	..
32	1964	.. Do. ..	39.90	..

Serial number. (1)	Year of Plantation. (2)	Name of the Plantation (3)	Area in hec. (4)	Remarks. (5)
33	1966 ..	Kolikarantho am	43.70	..
34	1965 ..	Paraliar	31.20	..
35	1966 ..	Do. ..	24.70	..
36	1966 ..	Thadikarankonam	40.40	..
37	1966 ..	Perunchani water speard area 3 bits.	15.80	..
38	1967 ..	Thadikarankonam	44.50	
39	1967 ..	Paraliar	23.10	
40	1968 ..	Do. ..	29.50	
41	1968 ..	Thadikarankonam	47.30	..
42(a)	1969 ..	Neduvilai	10.00	..
43	1969 ..	Paraliar	32.50	..
44	1970 ..	Do. ..	29.70	..
45	1971 ..	Thadikarankonam	2.50	..
46	1971 ..	Paraliar	35.30	..
47	1972 ..	Paraliar	15.00	..
48	1978 ..	Vellam bikani	24.40	
49	1978 ..	Maramalai	7.80	..

LIST OF TEAK PLANTATIONS IN BOOTHAPANDI RANGE.

Serial number. (1)	Year of Plantation. (2)	Locality and name of Plantation. (3)	Area in hec. (4)	Remarks. (5)
1	1970 ..	Velimalai South Teak Plantation in coupe No. I.	43.50	..
2	1971 ..	Velimalai South Teak Plantation coupe No. II	10.00	..
3	1972 ..	Velimalai South Teak Plantation coupe No. II (a).	33.00	..
4	1973 ..	Velimalai SouthTeak Plantation coupe No. III.	40.80	..
5	1978 ..	Mollam chilli saragam ..	9.80	..
			137.10	

Total Area in Alagiapandipuram	1,305.00
Total Area in Boothapandi	137.10
Total Area in Kulasekaram	789.00
	2,232.00

Character of the Vegetation.—

267. Some of the poorly stocked forests which were not giving any respectablee revenue were connected into teak plantations in the past to augment not only ther revenue but also to meet the incessment demand for teak from public. Howeves barring a few most of the teak plantations, though successful as far as stocking is concerned were not successful as far as timber production is concerned. This is mainly due to the high incidence of biotic factors not to speak of some unsuitable edaphic factors as well as certain places. Some of the good plantations could have done better had thinnings been done in time.

Section 3—Analysis and Vluaon of Crop.— :

268. The first teak plantation was raised in Kanyakumari district in 1921 as anexperiment seeing its success planting has been continued till 1978. After 1978 teak has not been raised as suitable areas were not available. The plantations were thoroughly inspected and reularly stock mapped based on which thinning is prescribed. Height and girth measurement has been taken laying sample plots and the observations have been mentioned in Chapter VI of Part I.

269. During the plan period no teak plantation is due for felling hence no revenue is expected. Thinning has been prescribed and the thinned material will be sold in auction every year. This will fetch some revenue, which may vary from year to year.

Section 4—Silvicultural system :

270. During the plan period no plantation will become due for felling and therefore the existing plantations will be maintained.

271. The silvicultural system adopted in this working circle will be clearfelling system.

272. *Choice of species.*—Teak has been raised, and the existing plantations will be maintained under sound silvicultural principles.

Rotation.—

273. Teak plantitng was commence in Kanniyakumari district in 1921 as an experiment and it has been continued. But the planting has not been done systematically in that the annual regeneration area varies from 2 ha. in certain years to 70 ha. in another year and in certain years no planting was done. Thus plantations of all age gradations are not available. Further some plantations have been congested for want of timely thinnings while some have received heavier thinnings. Sit conditions also vary considerably. The above factors have caused wide variation. in the girth and height increment of the plantations.

274. Thus being not sure of the rate of growth Thiru S. A. Rahmatullah in 1959 tentatively fixed the rotation period as 40 years and stated that a decision on the final rotation may be taken after 20 years based on statistics gathered at the Proposed Research Centre at Thadikarankonam. The state Silviculturist has opened sample plots but unfortunalety sufficient data has not been collected. The Officer-in-charge, Management and Mensuration Branch of whom the data was present has said that with the present available data it is not possible to fix the rotation age.

275. Because of the non-availability of sufficient data the growth rate of teak plantation could not be judged even now. Most of the plantations may confirm to All India IV quality teak. Therefore the rotation fixed as 80 yearsin the previou plan is continued in this plan also.

276. *Regulation of yield.*—None of the existing teak plantations will be due for felling during this plan period. Therefore no clearfelling of any of the existing plantation is contemplated. The yield will be only from thinnings.

Section 5—Silvicultural Regulations :

277. The existing plantations will be improved and maintained by carrying out thinning operations in each plantations.

278. *Thinnings.*—The thinnings will be carried out at the ages of 6, 12.20,30 and one final thinning will be done at 40. The first thinning as usual will be mechanical and the rest will be silvicultural and degree of thinning will be 'C' grade.

Marking rules for thinnings.—

279. (i) The mechanical thinning will be carried out by the Range Officer.

(ii) Making for silvicultural thinning will be done by the District Forest Officer or his Gazetted Assistant. Every tree to be felled will be marked with his personal hammer by abasal blaze, so that the authority for its removal will be caparent even after the tree is extracted. Felling of marked stems should follow closely on the marking itself.

(iii) A climber cutting and removal of parasites from the trees should precede every thinning and the marking officer should ensure these operations have been carried out properly before he commences marking. The parasites should be effectively destroyed preferably by burning.

(iv) Suppressed stems or saplings of miscellaneous species forming a natural understorey should not be cut unless they interfere with rhe teak, as they are expected to form a soil cover and assist in the biological control of defoliation.

280. *Thinning programme.*—The thinning schedule given in the last plan has not been followed strictly and in a number of plantations the thinning schedule is lagging behind. The following statement gives the programme of thinning :—

Year-wise Thinning of Teak for the period of 15 years :—

Year.	*Name of plantations.*	*Year of Planta-tion.*	*Area in hectares.*	*Number of thinning of due.*
(1)	(2)	(3)	(4)	(5)
1988-89	Kodayar-Thudalikadu	1968	44.5	IV
	Kodayar	1968	48.3	III
1989-90	Kodayar	1959	39.7	IV
	Do.	1969	43.5	III
1990-91	Kodayar	1960	49.4	IV
	Do.	1970	41.1	III
	Kodayar-Thudalikadu	1978	33.3	II
1991-92	Kodayar	1961	61.5	IV
	Do.	1971	23.1	III
1992-93	Kodayar	1962	69.2	IV
	Do.	1972	17.4	III
	Manalodai	1972	18.7	III
1993-94	Kodayar	1963	50.2	IV
	Do.	1973	19.2	III
1994-95	Kodayar	1964	55.9	IV
1995-96	Kodayar	1965	23.3	IV
1996-97	Kodayar	1966	34.0	IV
1997-98	Kodayar Bit I	1967 }	55.2	IV
	Bit II	1967 }		
1998-99	Kodayar-Thudalikadu	1958	50.4	V
	Kodayar	1958	48.3	IV
	Kodayar-Thudalikadu	1978	33.3	III
1999-2000	Kodayar-Thudalikadu	1959	39.2	V
	Kodayar	1969	43.5	IV
2000-2001	Kodayar	1960	48.8	V
	Do.	1970	41.1	IV

Boothapandi Range :

1990-91	Velimalai	1970	43.5	III
1991-92	Velimalai-Molenchilly	1978	9.8	II
1991-92	Velimalai	1971	10.0	III
1992-93	Do.	1972	33.0	I

Year.	Name of Plantation.	Year of Planta- tion.	Area in hectares.	Number of thinning due.
(1)	(2)	(3)	(4)	(5)
1993-94	Velimalai	1973	40.8	III
1998-99	Velimalai-Molanchillysaragam	1978	9.8	III
2000-2001	Velimalai	1970	43.5	IV
Alagiapandipuram Range :				
1988-89	Paraliar	1958	10.5	IV
	Thadikarankonam	1958	42.9	IV
	Do.	1968	47.3	II
	Paraliar	1968	29.5	III
1989-90	Paraliar	1959	70.8	IV
	Thadikarakonam	1959	39.7	IV
	Do.	1969	41.1	III
	Neduvilai	1969	10.0	III
	Paraliar	1969	32.5	III
1990-91	Thadikarankonam ..	1960	54.2	IV
	Paraliar	1960	51.0	IV
	Do.	1970	29.7	III
	Veliambikani	1978	24.4	II
x	Maramalai	1978	7.8	II
1991-92	Thadikarankonam	1961	21.4	IV
	Do.	1971	2.5	III
	Paraliar	1971	35.3	III
1992-93	Thadikarankonam ..	1962	29.5	IV
	Paraliar	1962	28.7	IV
	Do.	1972	32.4	III
1993-94	Paraliar	1963	26.7	IV
1994-95	Paraliar	1954	38.9	II
	Do.	1964	38.9	IV
1995-96	Kozhikaranthottam ..	1965	43.7	IV
	Paraliar	1965	31.2	IV
1996-97	Paraliar	1966	24.7	IV
	Thadikarankonam ..	1966	40.4	IV
	Perunchani (Water spread area).	1966	15.8	IV
1997-98	Paraliar	1957	49.4	V
	Do.	1967	23.1	IV
	Thadikarankonam	1967	44.5	IV
1998-99	Thadikarankonam	1958	42.9	V
	Paraliar	1958	10.5	V
	Do.	1968	29.5	IV
	Thadikarankonam ..	1968	47.3	IV
1999-2000	Thadikarankonam	1969	39.7	V
	Paraliar	1959	70.8	V
	Do.	1969	32.5	IV
	Neduvilai	1969	10.0	IV
2000-2001	Paraliar	1960	51.0	V
	Thadikanrankonam	1960	54.2	V
	Paraliar	1970	29.7	IV
1998-99	Vellambikani	1978	24.4	III
	Maramalai	1978	7.8	III

281. *Exploitation of thinned produce.*—Trees above 90 cm girth at B. H. will be treated as logs amd measured in colume and will be sold at Timber depot, Nagercoil. The rest of the poles will be sold in auction at site. Top, ends and miscellaneous growth will be converted into fuel and stacked in size of 2 m and sold at site.

Section 6—Other Regulations ;

282. *Plantation Boards.*—In each plantation a plantation board should be displayed at a conspicuous place. These plantation boards should be replaced in he month of April every year if necessary. The concerned Forest Ranger should ensure this.

283. *Fire protection.*—All plantations will be protected against fire by an exterior lines 5 m. wide which will be cut and burnt every year and by annual clearing of internal boundaries between plantations to a width of 3.5 metres. All burning of fire lines should be completed by the 31st January. Late burning of five lines may result in serious fires in the plantations. It is therefore important that late burning ist never resorted to

284. *Control.*—A control book, record of works, register of deviations, control journal, control maps and plantation journals will be maintained for this working circle. The manner in which these records are to be maintained are indicated in sections under the Chapter on Miscelleneous Regulations.

CHAPTER III.

CATAMARAN WORKING CIRCLE.

Section 1.—General constitution and character of vegetation.

285. *General.*—Kanyakumari District, apparently one of the smallest districts of Tamil Nadu, however, boasts of a lengthy coast line. Many a fishermen can be seen living along the entire coastline. Their survival depends upon the fish they catch daily by going out to the seas. Fishing being their main profession, these people however do not have any modern machanisms like motor boats, trailers etc. Even to-day they can be seen going to the seas only in their age old catamarans. The population of these fishermen being quite sizeable, their requirements of timber for catamarans is equally on the higher side proportionately. For constructing these catamarans, these fishermen mostly use the timber of Albizzia falcatoria.

Kanyakumari division with its salubrious climate, rainfall and soil, provide ideal conditions for raising plantations of Albizzia falatoria. Efforts in the past have also proved that this species is quite successful in this Division.

286. *Object of Management.*—The object of this working circle is to meet the demands of fisherman community to build their catamarans and to meet the growing need of raw materials of several match factories in Kanyakumari and neighbouring districts to the extent possible.

287. *General constitution*:—This working circle consists if all the areas planted with softwood species in Kanyakumari district.

Section 2.—Division of the area

Area.—The total area under this working circle is 1716.65 Ha.

288. The working circle will consist two series Kulasekaram and Alagiapandipuram. All the existing plantations in Kulasekaram Range will constitute Kulasekaram series and therein Alagiapandipuram and Boothapandi Ranges will constitute Alagiapandipuram series.

The following statement gives the particulars of the existing plantations.

Serial number and Name of Plantation.		*Year of planting.*	*Area in hec.*	*Species raised.*
(1)		(2)	(3)	(4)
Kulasekaram.				
1	Kaduvetti	1959	27.80	Bombaxmalabaricum Ailanthus.
2	Thodalikadu	1959	53.40	Do.
3	Chenencode-Veerapuli	1969	32.80	Do.
4	Do.	1961	50.10	Do.
5	Do.	1962	41.70	Do.
6	Near Vellerikani-Veerapuli	1963	49.80	Bombaxmalabaricum and Albizzia falcata.
7	Veerapuli	1964	17.00	Do.
8	Veerapuli-Valiammabi	1965	26.70	Do.
9	Chenancode-Veerapuli	1966	42.10	Do.
10	Valayanthuki-Veerapuli	1967	62.70	Do.
11	Kombumurinjan-Veerapuli	1968	59.10	Do.
12	Korvaikuzhi-Veerapuli	1969	42.50	Do.
13	Mohiliyadi-Veerapuli	1969	10.50	Do. (Albizzia only)
14	Thottamalai-Veerapuli	1970	58.80	Do.
15	Ettankunnu-Veerapuli	1971	48.20	Do.
16	Kadambamudu-Veerapuli	1972	47.80	Do.
17	Chenancode-Veerapuli	1975	27.00	Albizzia molucana
18	Errappakuzhi-Veerapuli	1975	8.50	Do.
19	Thodalikadu	1975	47.10	Albizzia molucana
20	Kayalakarai-Veerapuli	1976	43.75	Do.
21	Vellarakku-Kilamalai	1976	6.20	Do.
22	Velipila-Kilamalai	1977	23.90	Do.
23	Alamparai-Veerapuli	1977	17.50	Do.
24	Kombumurinjan-Veerapuli	1977	19.40	Albizzia falcata

(1)		(2)	(3)	(4)
25	Korraikuzhi-Veerapuli	1977	26.40	Do.
26	1976 Veerapuli matchwood coupe Plot II rotation	1977	15.50	Do.
27	1968 Kombumurinjan softwood failed patch	1978	14.20	Do.
28	1975 Chanancode failed patch ..	1978	4.90	Do.
29	Killikonam	1978	3.70	Do.
30	1971 Coco grazing plot Bit I ..	1978	10.20	Do.
31	(1969 Alamparai) Valayamthoki	1979	21.05	Do.
32	1968 Kombumurinjan	1980	6.20	Do.
33	1969 VMC Korvaikuzhi ..	1981	12.55	Do.
34	1961 Chenancode	1983	9.00	Do.
35	Mohilyadi	1983	5.00	Do.
37	Thottamalai-1971	1984	20.00	Do.
38	Chenancode	1985	15.00	Do.
39	Piravilai	1985	3.70	Do.
40	Koravaikuzhi	1985	5.50	Do.
41	Vattavilai	1985	1.75	Do.
42	Kombumurinjan	1985	1.75	Do.
43	Cap of 1968 Kodayar teak copue in Kalial bed.	1985	3.00	Do.
44	Cap of 1976 Kayakarai softwood planctation.	1986	5.00	Do.

Alagiapandipuram:

1	Kani Abandoned area	1958	31.60	Bombax malabaricum.
2	Balamore	1958	50.10	Do.
3	Kalikesam	1960	50.00	Do.
4	Balamore	1965	41.30	Do.
5	Balamore	1967	22.30	Bombax malabaricum.
6	Balamore	1968	24.70 1.00	 Albizzia falcata.
7	Balamore	1969	24.80	Bombax malabaricum.
8	Balamore	1970	23.30	Do.
9	Balamore	1970	7.70	Albizzia falcata
10	Balaomre	1971	26.50	Do.

(1)		(2)	(3)	(4)
11	Balamore	1972	20.10	Bombax malabaricum.
12	Balamore	1973	27.30	Do.
13	Keeriparai	1974	4.00	Albizzia falcata
14	Balamore	1975	36.40	Do.
15	Maramalai coupe I (2 bits) ..	1976	12.30	Do.
16	Balamore coupe X	1976	7.10	Do.
17	Mahendragiri	1981	6.00	Albizzia silver oak
18	Chellamthurthi beat failed patches	1982	2.30	Albizzia
19	1981 Balsawood plantation (Kalikesam Elephant camp)	1983	5.50	Albizzia falcata
20	Kadukathittai-Assambu RF ..	1984	21.50	Do.
21	Mahendragiri	1985	27.70	Do.
22	Thadikarankonam (Near woodland Estate). ..	1985	5.00	Do.
23	Thadikarankonam North beat (Near Balamore Estate). ..	1985	6.00	Do.
24	1981 Balamore failed mixed plantation.	1985	15.10	Do.
25	Near Balamore plantation ..	1985	1.48	Do.
26	Near Venkadathu vayal	1985	2.10	Do.
27	Balamore	1986	18.00	Do.
Boothapandi.				
1	Velimalai	1974	78.80	Albizzia falcata.
2	Velimalai	1975	67.00	Do.
3	Velimalai North Bit I	1985	4.30	Do.
(4)	Velimalai North Bit II ..	1985 ..	5.70	Albizzia falcata.
(5)	Velimalai North Bit III ..	1985 ..	0.92	Do.
			1,716.25 Ha.	

Section 3—Analysis and valuation of crop :

289. In the existing plantation sample enumeration was carried out. In Albi Albizzia falcata plantations the girth and height measurements were taken and it has been recorded in Chapter VI Part I. Presently the Albizzia falcata trees are being allotted to different fisherman co-operative societies, as per the orders issued by Government. The value of trees varies from year to year. From 1981-82 onwards the allotment and value realised are as follows :—

290. During 1981-82, 504 Nos. of Albizzia falcata trees have been allotted to the Secretary, Kanyakumari Fishermen Co-operative-*cum*-Marketing Society, Kanyakumari from 1970 Balamore Albizzia Plantation—Alagiapandipuram Range (Rs. 38,700) (G.O. Ms. No. 268 F. & F. Dept., dated 12th March 1981).

291. During 1982-83, 174 Albizzia trees have been allotted to the Secretary Ennore, Mugathuvarakuppam Fishermen Co-operative Society, Madras from, 1963 Manalodai Softwood Plantation—Kulasekaram Range (Rs. 98,137) (G.O. Ms. No. 1337, F. & F. Dept., dated 6th October 1982, Chief Conservator's Ref. No. D1;75923/81, dated 7th October 1982).

292. Further during 1982-83, 1,745 Albizzia trees has been allotted to the Secretary, Colahal Fishermen Co-operative Society from 1970 Thottamalai Albizzia plantation—Kulasekaram Range for Rs. 1,99,134.00 (G.O. Ms. No. 88, F. & F., Dept., dated 27th January 1983, Chief Conservator's Ref. No. D1;105170/82, dated 8th February 1983).

293. During 1983-84, 734 Albizzia trees has been allotted to the Secretary, Ovari Fishermen Co-operative Production-*cum*-Marketing Society, Ovari from 1971 Balamore Softwood Plantation—Alagiapandipuram Range for Rs. 1,19,529 (G.O. Ms. No. 1251, F. & F. Dept., dated 11th October 1983—Chief Conservator's No. D1 ; 90332!83-3, dated 1st December 1983.)

294. During 1985-86, 750 Nos. of Albizzia trees has been allotted to the Secter-Secretary, Tranquabar organisation of Fishermen efforts for Development, Thanjavur from 1974 Keeriparai and 1975 Balamore Albizzia Plantation—Alagiapandia-puram Range for Rs. 1,82,500 (G.O. Ms. No. 1223 F. & F., dept., dated 19th October 1984—Chief Conservator's No. E1 ; 105704!84, dated 24th November 1984).

Section 4—Method of Treatment :

Silvicultural Sustem.—The Silvicultural system will be clearfelling followed by artificial regeneration

295. The existing plantations will be maintained by tending and thinning The main species raised in the past are Bombax ceiba, Ailanthus excelsa, Albizzia falcata and Ceiba pentandra. Only Albizzia falcata has given better results. It is fast growing about 20 m. 3 hectare / year. It is in great demand for catamaran and match splints. The performance of Bombax ceiba is not good. The stocking is also poor. Hence after exploiting the Bombax ceiba plantations, these areas should be realanted by Albizzia falcata in next rotation.

296. *Rotation*.—The rotation fixed during previous plan both for Bombax ceiba and Albizzia falcata will be followed during this plan period also. The rotation for Albizzia falcata will be 10 years and Bombax ceiba 35 years.

297. *Regulation of yield.*—The yield will be regulated by area in general.

Section 5—Method of execuring fellings :

298. *Domarcation and Survey.*—The annual coupe shall be clearfelled as pery the prescriptions, on the ground demarcated by a line 2m. Wide and surveyed. It should be done well in advance so that the fair price can be approved in time, by Government and sufficient time is available for extraction, planting, etc.

299. *Felling.*—Annual areas to be clearfelled and replanted with Albizzia falcata will be exploited through the agency of contractors. Trees should be felled using saw only with as little wastage as possible. The work will commence systematically from one end of the coupe and progress towards the other end.

Section 6—Tabular Statement of Felling :

TABULAR STATEMENT OF FELLINGS.

Year of felling.	*Name of the Plantation.*	*Year of planting.*	*Area in ha.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)
1994-95 ..	Kaduvetti	1959	27.80	
1995-96 ..	Kalikesam	1960	50.00	
Albizzia falcata (Kulasekaram Series) :—				
1989-90 ..	Mohilyadi—Veerapuli	1969	10.50	
1990-91 ..	Thottamalai—Veerapuli	1970	58.50	
1994-95 ...	Kaduvetti	1959	27.80	
1995-96 ..	Kalikesam	1960	50.00	

TABULAR STATEMENT OF FELLINGS.

Year of felling.	*Name of the Plantation.*	*Year of planting.*	*Area in ha.*	*Remarks*
(1)	(2)	(3)	(4)	(5)
Albizzia falcata: (*Kulasekaram Series*) :				
1989-90 ..	Mohilyadi Veerapuli	1969	10.50	
1990-91 ..	Thottamalai Veerapuli	1970	58.50	
1991-92 ..	Ettankunnu Veerapuli	1971	48.20	
1992-93 ..	Kadambamudu Veerapuli ..	1972	47.80	
1995-96 ..	Chenancoda Veerapuli	1975	27.00	
1995-96 ..	Arrappaluzhi Veerapuli	1975	8.50	
1995-96 ..	Thodalikadu	1975	47.10	
1996-97 ..	Kayalkuran Veerapuli	1976	43.75	
1996-97 ..	Vellarakku Kilamalai	1976	6.20	
1996-97 ..	Velipila Kilamalai	1977	23.90	
1997-98 ..	Alamparai Veerapuli	1977	17.50	
1997-98 ..	Kombumurinjan Veerapuli ..	1977	9.40	
1997-98 ..	Korvaikuzhi Veerapuli	1977	26.40	
1997-98 ..	Veerapuli matchwood Coupe Plot II.	1977	15.50	
1988-89 ..	1988 Kombumurinjan sof-wood failed patch.	1978	14.20	
1988-89 ..	Chanancode failed patch ..	1978	4.90	
1988-89 ..	Killikonam	1978	3.70	
1988-89 ..	1971 Cocco grazing plot bit I ..	1978	4.30	
1989-30 ..	(1969 Alamparai) Valayam-thokki.	1979	21.05	
1990-91 ..	1968 Kombumurinjan	1980	6.20	
1991-92 ..	1969 VMC Korvaikuzhi ..	1981	12.58	
1991-92 ..	1971 Failed coco plot Bit I ..	1981	4.10	
1993-94 ..	1961 Chenancode	1983	9.00	
1993-94 ..	Mohilyadi	1983	5.00	
1994-95 ..	Thottamalai-1971	1964	20.00	
1995-96 ..	Chenancode	1985	15.00	
1995-96 ..	Priavilai	1985	3.70	
1995-96 ..	Korvaikuzhi	1985	5.50	
1995-96 ..	Vattavilai	1985	1.75	
1995-96 ..	Kombumurinjan	1985	1.75	

Year of felling.		Name of the plantation.	Year of planting.		Area in ha.	Remarks.
(1)		(2)	(3)		(4)	(5)
1995-96	..	Gap of 1968 Kodayar Teak coupe in Kalial bed.	1985	..	3.00	
1996-97	..	Gap of 1976 Kayakarai soft-wood plantation.	1986	..	5.00	
Alagiapandipuram Series :						
1994-95	..	Keeriparai	1974	..	4.00	
1995-96	..	Balamore	1975	..	36 40	
1996-97	..	Maramalai coupe I (2 bits) ..	1976	..	12 30	
1996-97	..	Balamore Coupe X	1976	..	7.10	
1991-92	..	Mahendragiri	1981	..	6.00	
1992-93	..	Chellamthurthi beat failed patches.	1982	..	2.30	
1993-94	..	1981 Balsawood plantation (Kalikesam Elephant Camp).	1983	..	5.50	
1994-95	..	Kokkukathittai Asambu RF	1984	...	21.50	
1995-96	..	Mahendragiri	1985	..	27.70	
1995-96	..	Thadikarankonam (near Woodland Estate).	1985	..	5.00	
1995-96	..	Thadikarankonam North beat (near Balamore Estate).	1985	..	6.00	
1995-96	..	Near Balamore plantation ..	1985	..	1.48	
1995-96	..	Near Venkadathu Vayal ...	1985	..	2.10	
1996-97	..	Balamore	1986	..	18.00	
Boothapandi Series :						
1994-95	..	Velimalai	1974	..	78.80	
1995-96	..	Velimalai	1975	...	67.00	
1995-96	..	Velimalai North Bit I ..	1985	..	4.30	
1995-96	...	Velimalai North Bit II ..	1985	..	5.70	
1995-96	...	Velimalai North Bit III ...	1985	..	0.92	
1996-97	...	Asambu	1986	..	18.32	

Section 7—Regulation of regeneration operations

300. *Nursery.* Seeds will be collected from the plus trees and will be sown in 13 × 25 cm poly bags. The bags will be filled with good fertile earth collected from the tanks or from the dam site, will be sieved well. The bags are filled with this earth adding 1/4th quantity of farm yard manure mixed with 60 per cent fungicide (by weight). The containers will be watered regularly and the planting materials will reach to a height of not less than 70 cm before planting. The age of the container plants will be not less than 10 months at the time of planting. The containers will be shifted frequently to avoid the roots striking the grounds.

301. *Clearing and burning* : A fire line 5m wide shall be cut all round the regeneration area and this will be scrapped and burnt at the beginning of February shortly before the regeneration area is burnt. The burning operations should be done departmentally after taking adequate precautions to prevent fire from escaping out of the area into the surrounding forests. The slash in the clearfelled area should be burnt in February. Filling and reburning should be completed by middle of March. The entire area should be evenly burnt. The left behind us less logs should be placed along the contour toprevent soil wash and cause least interference for other operations. Severe burn should be avoided.

302. *Aligning and staking.*—The espacement will be 3 m×3m. The length of stakes should be at least 50 cms. This operation should be completed by the end of March. The stakes should be in their place even after planting to facilitate replacement of casualities later.

303. *Pitting.*— 30 centimetre cube pits will be dug at each stake and the dug out soil allowed to weather for atleast one month. The District Forest Officer should ensure that the pits are dug atleast a month before planting.

304. *Planting.*—Optimum size seedlings will be planted in 30m pits at 3m×3m espacement on the onset of south west monsoon i.e., in the month of June itself. Hence utmost caution is necessary to see that the planting works are completed on the onset of south west monsoon itself. Any slackness or negligence will adversely affect the establishment of the juvenile plants. Therefore the preparation of ground should have been completed not later than 15th May of the year of planting. This vital factor should be borne in mind.

305. *Kumri.*—The Kumri cultivation has been the cause of failure or poor performance of many plantation. The kumridars are self centered and are more interested in their Tapioca crop negelecting the main forest species. In most of the kumri plantations, severe soil erosion was noticed resulting in loss of top soil. Hence kumri cultivation should not be allowed.

Section 8—Subsidiary Silvicultural Regulations :

306. *Replacement of Casualities.*—During the first year 10 per cent casualities will be replaced as and when they occur by inspecting the area frequently during the first month itself so that full stocking is achieved. In the second year as soon as south west monsoon breaks in, casualities will be replaced by container plants.

307. *First year weeding and soil working.*—There will be four weedings and soil working in the first year. First weeding and soil working will be a fortnight after completion of planting, 2nd in July—August, 3rd in September—October, and the 4th in early January. The plants will be kept free of weeds and agricultural crops to a radius of 50 cm. After each weeding is completed the Range Officer should report to the District Forest Officer and the next weeding should be taken only after the receipt of District Forest Officer's order.

308. *Second year weeding.*–In 2nd year 2 weedings will be sufficient .First shall be as soon as the monsoon breaks and the second towards the end of the monsoon before the last showers. No weeding need be done to the plants that have grown beyond the height of 2 metres. All weeding and soil working immediately after completion will be inspected by the District Forest Officer.

309. *Thinning.*—Albizzia falcata being a fast growing species needs much of growing space. So a silvicultural thinning will be done after 5 years resulting in an espacement of 4.25 metres. Eventually 400 sound trees of average girth 60 cms. and 20 M. mechantable bole can be expected. During thinning all miscellaneous species suppressing the main species should be cut back. Climber cutting should be done before marking for thinning and care should be taken while felling for thinning that the trees to be retained are not damaged. The thinned produce can be sold profitably for match splints because at least half the number of trees thinned would have attained average girth about 40 cms. Thinning should be done even if not remunerative.

310. The felled tree losses its value sharply if allowed to dry unlike other timber trees. Thinning and removal should be simultaneous, so the trees to be thinned should be numbered and sold in auction soon after felling.

Programme of thinnings.—The following statement gives the programme of thinning.

THINNING SCHEDULE OF ALBIZZIA FALCATA PLANTATIONS.

Serial number.	*Year of thinning.*	*Name of Plantations.*	*Year of plantations.*	*Area in hectares.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1	1988-89	Balamore	1968	1.00	
2	1991-92	Balamore	1971	26.50	
3	1989-90	Keeriparai	1974	4.00	
4	1990-91	Balamore	1975	36.40	
5	1991-92	Maramalai coupe I	1976	12.30	
6	1991-92	Balamore coupe X	1976	7.10	
7	1988-89	1981 Bulsewood Plantation ..	1983	5.50	
8	1989-90	1981 Kadukathithai Asambu R.F.	1984	21.50	
9	1990-91	Mahendragiri	1985	27.70	
10	1990-91	Thadikarankonam (Near Woodland Estate).	1985	5.00	
11	1990-91	Thadikarankonam North beat .. (Near Balamore Estate).	1985	6.00	
12	1990-91	1981 Balamore failed mixed plantations.	1985	15.10	
13	1990-91	Near Balamore plantations ..	1985	1.48	
14	1990-91	Near Venkadathu Vayal	1985	2.10	
15	1991-92	Balamore	1986	18.00	
16	1989-90	Velimalai	1974	78.80	
17	1990-91	Velimalai	1978	67.00	
18	1990-91	Velimalai North Bit I	1985	4.30	
19	1990-91	Velimalai North Bit II	1985	5.70	
20	1990-91	Velimalai North Bit III	1985	0.92	
21	1988-89	Near Vellerikani—Veerapuli ..	1963	49.80	
22	1989-90	Veerapuli	1964	17.00	
23	1990-91	Veerapuli	1965	26.70	
24	1991-92	Chenancode—Veerapuli	1966	42.10	
25	1987-88	Valazanthai	1967	62.70	
26	1988-89	Kombumurinjan	1968	59.10	
27	1989-90	Korvaikuzhi—Veerrpuli ..	1960	42.50	

(1)	(2)	(3)	(4)	(5)	(6)
28	1987-88	Kombumurinjan—Veerapuli ..	1977	9.40	
29	1987-88	Korvaikuzhi	1977	26.40	
30	1987-88	1976 Veerapuli Matchwood ..	1977	15.50	
31	1988-89	Killikonam	1978	3.70	
32	1988-89	1971 Coco grazing plot bit I ..	1978	4.30	
33	1989-90	1969 Alamparai Valayamthokki	1979	21.05	
34	1990-91	1968 Kombumurinjan	1980	6.20	
35	1991-92	1969 VMC Korvaikuzhi	1981	12.55	
36	1988-89	Chanancode	1983	9.00	
37	1988-89	Mohilyadi	1983	5.00	
38	1989-90	Thottamalai 1971	1984	20.00	
39	1990-91	Chenancode	1985	15.00	
40	1990-91	Piravilai	1985	3.70	
41	1990-91	Korvaikuzhi	1985	5.50	
42	1990-91	Vattavilai	1985	1.75	
43	1990-91	Kombumurinjan	1985	1.75	
44	1990-91	1968 Kodayar teak coupe in Kalial beat.	1985	3.00	
45	1991-92	1976 Kayakarai softwood Plantation	1986	5.00	

Section 9—Other Regulations.

311. *Closure to grazing.*—The area should be closed to grazing for a period of 5 years. Effective protection against cattle especially goats should be enforced.

312. *Plantation Board.*—Every plantation should carry at the salient corners of its periphery, conspicuous boards showing the calender year of its formation and its area. Such of these boards as require replacement will be renewed in the month of April every year.

313. *Inspection paths.*—Permanent and properly graded inspection paths 2lm wide will be formed in each plantations and kept clean of all growth to facilitate easy inspection.

314. *Fire protection.*—All plantations will be protected against fire by an exterior line 5m. wide which will be cut and burnt every year and by annual clearing of internal boundaries between plantation to a width of 3.5 metres. All burning of fire lines should be completed by the 31st January. Late burning of fire lines may result in serious fires in the plantations. It is therefore important that late burning is never resorted to.

315. *Control.*—A control book, record works, register of diviation, control journal, control maps, Plantation and nursery journal will be maintained for the working circle.

CHAPTER IV.

BAMBOO WORKING CIRCLE.

Section I—General constitution of the Working circle and character of the vegetation.

316. *Object of Management.*—The main object of this working circle is to manage the existing bamboo plantations.

317. *General constitution.*—The Bamboo working circle comprises of a, Bamboo bearing areas in Kanyakumari division. Bamboo occurs in Kilamalai Veerapuli, Velimalai and Asambu Reserved Forest of Kulasekaram and Alagiapandipuram Range.

318. *Character of Vegetation.*—*Bambusa bamboo* is the predominent species and occur in the moist deciduous type of forests.

319 Section 2. Division of the area.

The working circle will have only one felling series having 3 coupes.

Coupe—I Whole of Alagiapandipuram.

Coupe II—

North.—The boundary starts from north west cornor of Kilamalai R.F. and runs along the northern boundary of the said R. F., till it meets Kodayar River.

East.—Thence the boundary runs southwards along the Kodayar River till it meets the bijunction point of Kilamalai and Veerapuli R.sF.

South and West.—Thence the boundary runs along the south and west of Kilamalai R.F., till it reaches the starting point.

Coupe III—

North.—The boundary starts from the point were the Kodayar River. cuts the northern boundary of Kilamalai R.F. and thence runs along the said R.F. and along he northern boundary of Veerapuli F. R. till it meets the boundary of Alagiapandipuram Range.

East.—Hence the boundary runs along the western boundary of Alagiapandipuram Range till it cuts the southern boundary of Veerapuli R. F.

South and West.—Thence the boundary runs along the Veerapuli R. F. and along the common boundary of Veerapuli and Kilamalai R. F., and finally along the Kodayar River till it meets the starting point.

Section 3. Analysis and Valuation of crop.

320. Rules regarding the working of Bamboo were not followed properly in the past. Hence there have been over exploitation of Bamboo and it is proposed to suspend the working of Bamboo coupes for six years during this plan period.

Section 4—Method of treatment.

321. The Prevailing silvicultural system of selection thinning of clumps consisting of removal of individual mature culms in accordance with the following rules will continue.

322. *Felling cycle.*—A felling cycle of 3 years is prescribed for the working of Bamboos.

323. *Regulation of the working.*—The regulation of working will be by area. The fellings series has been divided into hree coupes with permanent boundaries, readily distinguishable natural features like bridges, streams, foot-paths, Rivers etc.

324. *Sale Unit.*—The coupe sale formed he unit of lease. It will be worked atain according to its next turn in sequence of felling. Period of lease will be from 1st April to 31st March or from the date of Agreement to 31st March.

Section 5—Method of executing felling.

325. *Agency of Exploitation.*—The agency will be the companies aurhorised Government.

326. *Felling Rules.*—The felling following rules are prescribed.

(1) Culms less than one year old shall not be felled.

(2) A minimum of 6 mature culms over one year shall be left unfelled in each clump.

(3) Immature clumps shall not be worked, immature clums will be those with frusely spourted clums much thinner in size than the normal nature clumps of the species.

(4) Felling should be done as far as possible on the side of the clumps opposit to that from which the largest number of new culms appear.

(5) Unfelled culms should be left standing evenly distributed over the clump.

(6) Culms should be cut clear and as low as possible between the first and second nodes from the ground level.

(7) No culm should be removed with the rhizome.

(8) Fully or partially cut bamboo shall not be left unremoved in the clump.

(9) Due to natural reasons, if no new culms are produced in the clump in a year, atleast half the number of old culms in a clump should be retained.

(10) Culms of clumps in flower should be cut only after seeding has taken place.

(11) Fellings should be supervised by the lessee or his authorised agent.

It is of utmost importance to ensure that the felling rules are rigidly enforced and violation of any of the conditions serverely penalised. Absence of the contractor or his agent in the coupe under working should never be viewed lightly since this has led to the indiscriminate felling outside the coupes and violation of other agreement conditions.

327. Regarding exploitations of bamboo plantations, it is absolutely necessary, that the work should be personally supervised by a subordinate not lower than a forester in rank and felled culms are numbered both on the stem portion and on the stump portion of each culm and clumps are given separate serial numbers. A record of culms removed from each clump should be maintained to check illicit fellings at a later date.

Section 6—Tabular Statement of Felling.

328. As the existing stock of Bamboo is poor, it is decided to give rest for six years in this plan period, so that the Bamboo can re-establish itself. After six years, the District Forest Officer can inspect the Bamboo coupe and if he finds that the Bamboo can be worked, then he should submit proposals to the competent authority or disposal of Bamboo. The year-wise felling statement is being given below :

Year of felling (1)	*Coupe No.* (2)
1994-95	I
1995-96	II
1996-97	III
1997-98	I
1998-99	II

Section 7—Other Regulations.

329. *Record of Statistics.*— A monthly account of all removal of bamboos shall be rendered to the Range Officers by the lesses. The Range Officer should exercise a check over the correctness of accounts furnished. The Range Officer will hnder abstract of these accounts of each coup to District Forest Officer to incorporation in the concerned records and register.

330. *Flowering of bamboos.*—Special mention should be made in the contro l journal about he flowering of bamboo.

331. *Fire Protection.*—Bamboo areas will be patrolled intensively during the season. Fire Watcher should be appointed in fire season.

332. *Control.*—Control forms related to this working circle shall be posted at the end of every year. Record of Works and Register of deviation will be maintained.

333. *Control Forms.*—Control forms which accompany the wor king plan should be posted soon after the close of each financial year.

A control journal, a control book, plantation and nursery journels, a record of wo k; and control maps will be maintained for this working Circle. The posting and maintenance of. control records and maps is a matter of vital importance and must receive the per sonal attention of the District Forest Officer.

334. *Record of works.*—All works carried out under the prescription of the Working Plan as well as such measures as are neither prescribed nor suggested but carried out should be recorded in this form.

335. *Control maps.*—The control maps should be prepared a convenient scale of the areas annually regenerated with the name of the species planted and with the date of original planting.

336. *Control journal.*—The control journal will give a detailed account of the management of the range. The objects of the journal is to secure a running commentry on all objects of administration specially on the extent to which the objects of the working Plan have been realised and the extent to which the methods prescribed have been found suitable in the control book and the Record of work. The journal is intended to give the District Forest Officer an opportunity for recording suggestions for modification and improvements in the methods of working laid down in the Wôrking Plan. If it is maintained, it should be of great help when the plan comes for revision. The journal should therefore be taken to camp by the District Forest Officer and critical observations should be recorded in it during or after inspection.

337. The control journal is a technical record and must be maintained personally by the District Forest Officer. A copy of the entries made during the year should be submitted to the Conservator of Forests soon after the close of each financial year along with a copy of the devision statement the control forms and maps.

338. *Control Book.*—This register should show all operations actually carried out in connection with the exploitation in each series as per prescriptions of the working Plans, as well as such measures as are neither prescribed nor suggested but carried out.

CHAPTER V.

ECO-RESTORATION WORKING CIRCLE.

Section 1—General constitution and character of Vegetation :

339. The science of inter relationship between organisms and their environment is known as Ecology. The human exploitation of natural resources at a greater rate than it can be resuscitated and without putting back enough inputa into the natural eco system is responsible for the environmental maladies the country is facing to-day.

340. The past mistakes of over exploitation of natural resoures and harnessing the forces of nature for the benfit of a growing human population and the concurrent apathy to environmental regeneration and conservation have begun to boomerang on us now. An ever incressing population with unlimited ambitions and aspiration for a better quality of live as placed a tremondous stress our environment so much, so, the environment has started to undergo drastic changes hitherto unnown. Evidence of these Phenomenon can be seen in the spread of desertification, floods, droughts extinction of many species of plants and animals that once constituted the eco-system.

341. The natural environment has remarkable resistance and normally it bounes back to near pristine state, if left alone.

The forests of Kanyakumari division is a till date example of all the above observations. Because of its proximity to the Equator, and the influence of south west monsoon, combined with hilly terrain and vast coastline this division had unique forest types. Due to heavy human and cattle pressure, and certain management practices, degradation has set in these forest areas.

342. *Object of Management.*—The object of this working circle is to restore the destroyed and lost eco system back to its original shape as far as possible by planting suitable tree species in degraded forests. The degraded forest will consist of reserve forests which have been such exploited under fuel working circle in the previous plan.

Due to poor management practice followed in the past degradation has set in these areas. The degradation was due to intensive working of fuel in the past and much of the area had undergone, a number of fellings. Only recently in the interest of forest conservation, the working of these forests for fuel was compulsorliy stopped from 1977. Although the Forests are degraded, their potential is not totally lost as evidenced by the presence of regenerating stools and recruitment of natural seedlings of the forests. These areas are rich in species of fuel, fedder, Minor Forest Produce etc.

343. Grazing is a major enemy to these forests. Excessive and uncontrolled grazing have already affected, the coppice regeneration besides causing damage to the soil by constant trampling. The most affected areas are Therkumalai, Mahendragiri and Velimalai Reserved Forests. These scattered isolated killocks of this treact are worst affected due to their all around accessibility. Apart from the physical damage to these young shoots the palatable grass is almost lost due to selective grazing of animals and only coat grasses and species like Euphorbia pterolobium indicum etc. are remaining at present. In short the quality and productivity of these forests have been adversely affected rendering major part of the forests as barren and degraded.

344. As a matter of fact Therkumalai R.F. and Mahendragiri R.F. get less Rainfall than other Reserved Forests of Kanyakumari Division resulting in a heavy morality to natural forests and plantation crops. The fuel coupes have partially failed to regenerate, mainly due to die back of coppice growth. Only species withstanding the drought spells like Acacia planifrons etc., are surviving in this track

345. In addition to the above menace like over grassing and drought. the continuous interference and impact of human beings on these forests for their day to day livelihood like cutting of trees for firewood, and other domestic purpose, green manure leaf etc., have also reflected upon the forests vegetation and thus rendering the forests as degraded. These above mentioned factors are playing their effective and unchecked roles as a continuous process, althrough the years.

346. It is possible to restore them to their original ecological status with coppice and regeneration by way of providing chain-link fence along the peri-pheri to prevent, physical damage and thus to preserve and protect the existing vegeta-taion. Within these areas under Eco-restoration wherever gaps are found, they will be supplemented with artificial regeneration by planting with suitable species. Therefore by elimination and controlling the biotic factors like grazing, activities of human beings by way of introducing systematic effective measures, these forests, can be restored back to its original. It will also help in improving the water table making climate more equitable, create better habitat for the fauna to live in an ultimately the system will be move effective. With these views the following measu-res are now being proposed to be implemented in this plan in a systematic manner.

In Kanyakumari Division, Therkumalai, Mahendragiri and Velimalai R.F.S are more degraded therefore these Reserved Forests are being taken under this working Circle. The main work will comprise.

(1) Eco-restoration through preservation and protection of the degraded area having backward growth of useful vegetation.

(2) Raising plantation with suitable species to fill the gaps.

(3) Providing these areas with chain link fencing.

347. *General constitution.*—This working circle will include fuel plantations already raised and the plantations proposed during this plan period.

348. *Character of the Vegetation.*—(1) The Southern Tropical Thorn Forest commonly known as scrup jungle has a predominance of thorny species one. The terrrain is mostly flat ground or low undulating hillocks and the rainfall varies from 50 cms.. to 75 cms., bulk of which is derived from the North-East monsoon commencing in October. The species that occur here include Dichrostachys cineria, Acacia latro[illegible] planifrons, Albizzia amara, Zizyphys species, a few Azadirachat indica, Dodonia viscosa, Carissa spineria, Pterolobium indicum. Euphorhia species from the under growth. The ground has been rendered hard because of heavy grazing and trampling by cattle with the result the rain water runs off without pene-tration into the soil and the plants are not benefited fully by the rainfall.

349. (2) *Dry deciduous forest.*—This has suffered mainly due to indiscriminate over exploitation. Here the ground is slopy mostly without crops of rocks. The species commonly found are Chloroxylon swietenia, Albizzia amara, Erythroxylon-monogynum, Acacia species, stunted growth of teak, Pterocarpus marsupium, Anogiessus latifolia, etc. The undergrowth is full of course grass and thorny clim bers like Acacia intsia, Petrolobium indicumetc. Frequent fires and over grazing are factors to be reckoned. The rainfall is about 80 cms. to 100 cms. mainly from North-East monsoon with a few showers during June-July.

Section 2—Division of the Area :

350. An area of 50 ha. has been proposed to be taken up for plantations during the plan period as detailed below. The total area under this working circle is 792.25 ha. which includes 292.25 ha. fuel plantation raised till now. Areas proposed for planting are as follows.

Name of R.F.	*Area*
(1)	(2)
Mahendragiri	350 ha.
Poigaimalai	150 ha.

Section 3—Analysis and valuation of crop.

351. The areas proposed for inclusion in this working circle are suitable for regeneration. Predominently rocky or bouldery sites and steep slopes unsuitable for artificial regeneration have been excluded. Small patches of rock within the areas included will have to be omitted during the course of actual planting.

A detailed statement showing the existing plantation raised is given below:—

Name of Plantation.	*Locality and Name of Plantation.*			*Area in hec.*
(1)		(2)		(3)
1978	Therkumalai	Odai Plantation		33.10
1979	Therkumalai	Odai Plantation		80.00
1980	Therkumalai	Do.	Bit I	45.10
1980	Do.	Do.	Bit II	21.60
1980	Do.	Do.	Bit III	35.65
1980	Do.	Do.	Bit IV	7.00
1981	Do.	Do.	Bit I:	12.80
1981	Do.	Do.	Bit II	37.00
1981	Do.	Do.	Bit III	12.00
1981	Do.	Do.	Bit IV	8.0
		Total	..	292.25

352. *Valuation of crop.*—As the areas included in this working circle do not contain any exploitable growth, no valuation surveys was considered necessary.

Section 4—Method of Treatment.

353. *Silvicultural system.*—The silvicultural system adopted will be to artificiary restock these degraded area with suitable species, improving the existing growth stock, and supplementing wherever remnants of the earlier attempts on regeneration are found.

354. *Choice of species.*—The main species will be Acacia planifrons, Acacia ferrugenia, Acacia leucoploea, Albizzia lebbeca and Albizzia mara, Pterocarpus marsupium etc. Acacia planifrons comes up well in inhospitable soil and has done well on account of mere protection. Other native species as desired by the District Forest Officer may also be planted as the list of species furnished here is not exhaustive.

Tabular statement of planting.—The following statement gives details of areas to be planted annually in the eco-restoration working circle. The annual planting areas have been marked on the Management map appended to this plan.

	Poigaimalai	*Mahendra-giri.*
(1)	(2)	(3)
1989-90	15	35
1990-91	15	35
1991-92	15	35
1992-93	15	35
1993-94	15	35
1994-95	15	35
1995-96	15	35
1996-97	15	35
1997-98	15	35

355. All existing tree growth and shrub growth will be left as such in the field. Clearance will be done to the absolute minimum.

356. **Besides planting of the above species sowing of seeds of native species like Ziayphus, Dichrostachya and Neem may also be done at the discretion of the District Forest Officer.**

Section 5—Regulation of Regeneration Operation :

357. *Survey and demarcation.*—The annual regeneration area will be demarcated on the ground in accordance with the planting series map by cut lines 2m. wide. The survey and demareation must be completed one year in advance of planting.

358. *Aligning and staking.*—Aliging and staking will be done at an espacement of 3m × 3m.

359. *Planting.*—North-East monsoon may set in at any time after the first week of October and as soon as the rains set in, container plants should be planted in pits after carefully removing the polythene containers. The planting should be quickly completed by employing the maximum number of mazdoors so that full advantage is taken of the short monsoon. The plants should be 6 to 9 months old and about 50 cms. height at the time of planting.

360. *Nursery.*—Acacia plantforms seeds should be collected locally from sound and well grown trees, if the Deputy Conservator of Forests (Genetics) is not able to supply the required quantity of seeds of different species. Kaliavoor Reserved Forest can supply most of the requirements of the Division. The seeds should be separated from the pericar, dried and stored in gunny bags. Seed collection can be done during the period May to July.

361. *Nursery site.*—The nursery should be located as far as possible near the lanting site with an unfailing water source. The load from the nursery site to the planting area should be minimum.

362. *Preparation of container plants.*—The present practice of raising container plants will be continued. The nursery operations should be commenced sufficiently in advance so that all the containers do have a well grown seedling of at least 50cm. height at the time of planting out. To achieve this the nursery operations should be started in January of the year of planting. The container should be of 150 guage, 25cms. in height and 10 cms. in *diameter Adding* a small quantity of Neem oil cake, well powdered, to the container plants while watering, helps the seedlings to grow fast and vigorously.

Section 6—Sunbsidiary Silvicultural Operatiobn :

363. *Replacement of Casualities.*—During the first year casualities will be replaced as and when they occur by going over the area frequently during the 1st month itself so that full stocking is achieved in the 1st year. However, casualities if any will be replaced in the 2nd year during the early monsoon period upto 10 percent.

364. *Weeding and Soil working.*—When kumri cultivation is not done 2 weedings combined with soil working are prescribed during the1st year.The 1st weeding willbe done in combination with soil working to a depth of 15cms. and to a width of 50cms. around each plant a month after planting. The second weeding consisting of the same operations will be done and completed towards the end of monsoon by difinitely before the last showers. During the 2nd year two weedings combined with one soil working will be done first in October along with replacement of casualties soon after the North-East monsoon sets in and the second in December.

Section 7—Other Regulations :

365. *Fencing.*—The planted area will be fenced with chain link fencing.

366. *Plantation Board.*—The area regenerated will be indicated by a small board of uniform size fixed at salient points. It will indicate the year of formation and the actual area planted. The Boards will be renewed if necessary in the month of April every year.

367. *Closure to grazing.*—The area should be closed to grazing for a period of 5 years. Effective protection against cattle, including goats, should be enforced.

368. *Inspection paths.*—The plantation should have a net work of jeepable tracks as far as possible to facilitate inspection of even the remote parts. So, the area should be divided into approximately 10ha. bits and all round 3m. wide paths formed. This should be done at the time of aligning itself, so that pitting is avoided on these tracks. This will help checking of even the preliminary works like up-rooting, ploughing and pitting.

369. *Control.*—The following control records will be maintained by the District Forest Officer and posted annually.

370. *Control Forms.*—Conrol forms which accompany the Working Plan should be posted soon after the close of eachs financial year.

371. A control Journal, a control book, plantation and nursery journals, a record of works and control maps will be maintained for this Working Circle. The posting and maintenance of control records and maps is a matter of vital importance and must receive the personal attention of the District Forest Officer.

372. *Record of works.*—All works carried out under the prescription of the Working Plan as well as such measures as are neither prescribed nor suggested but carried out should be recorded in this form.

373. *Control maps.*—The control maps should be prepared on a convenient scale of the areas annually regenerated with the name of the species planted and with the date of original planting.

374. *Control journal.*—The control journal will give a detailed account of the management of the range. The object of the journal is to secure a running commentary on all objects of administration specially on the extent to which the objects of the Working Plan have been realised and the extent to which the methods prescribed have been found suitable in the control book and the Record of works. The journal is intended to give the District Forest Officer an opportunity for recording suggestions for modification and improvements in the methods of working laid down in the Working Plan. If it is maintained it should be of great help when the plan comes for revision. The journal should therefore be taken to camp by the District Forest Officer and critical observations should be recorded in it during or after inspection.

375. The control journal is a technical record and must be maintained personally by the District Forest Officer. A copy of the entries made during the year should be submitted to the Conservator of Forests soon after the close of each financial year along with a copy of the deviation statement the control forms and maps.

376. *Plantation Journal.*—A plantation journal will be maintained which should contain the name and year of the plantation, its location, area, the nature of the previous growth, the revenue obtained by clearing the growth, the details and cost of formation of the plantation and further history like thinning and the revenue realised thereby.

377. *Nursery Journal.*—A nursery journal will be maintained for each nursery showing its location and number, size of beds, species sown, seed origin, date of sowing, nursery techniques adopted, watering regime cost of maintenance etc. both the plantation and nursery journals will be maintained personally by the Range Officer. Inspecting Officers will note their remarks in these journals which will be replied to by the Range Officer. Copies of these journals will be maintained at the District Forest Office also.

378. *Control Book.*—This register should show all operations actually carried out in connection with the exploitation in each series as per prescriptions of the working plans, as well as such measures as are neither prescribed nor suggested but carried out.

Model Estimate for Miscellaneous R.A. for 100 Ha.

No. of plants	..	1,11,130
100% Caualiity	..	11,113
		1,22,210 or 1,22,200

Polythene bags 13×25 of 200 guages

Species : A. Ferrogenea, A. planifrons

A. leucopholea, Vagai, Usil, Palai, ete.,

Sl. No.	Quantity	Details of work	F.S.R item No.	Rate	Per	Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1)	1,22,200	Cost of polethene bags 13×25cm of 200 guage	Present Market value	87,80	1000 Nos.	10729.16
2)	50 Kgs.	Cost of seeds	L.R.	10.00	Kg.	500.00
3)	1,22,200	Site rent for keeping nursery.	5-5	1,60	1000	1368.64
4)	100 M2	Clearing & preparation of nursery Site 10M×10M-10M2	5-4	0.80	10M2	8.00
5)	1,22,200	Collection of fertile earth farmyard manure and fixing in the ratio of 4:1 filling them in polythene bags pricking the seedlings and arranging them in beds including cost of manue	5-8	50.00	1000	6110.00
6,	1 No.	Construction of water storage tank with brick and cement morter of size 2M×2×M2M	12.10	250,00	each	250.00

(1)	(2)	(3)	(4)	(5)	(6)	( )
7	4 beds	ormation of germination bed by breaking clods mixing with farmyarmanure manure beds of size 10M × 10 M × 30 cm. with sides support sowing seeds watering for the day and covering straw (excluding the cost of manure	5-6	15.00	Bed.	60.00
		Note :—As the seeling shall be collected with 15 days the bed can be used after collecting the seedlings for prickking out if more seedlings are required sowing of seeds should not exceed more than 5 Kgs. at a time.				
8	4 beds; 15 days.	Watering nursery beds with rosecane twice daily for 15 days.	5-7	0.25	Bed/day.	16.00
9	1,22,200 / 10 days.	Watering the container plants. 30 days daily twice. 30 days daily once 20 days alternative 30 days once in 3 days. Totally 110 days within a period of 7 months.	5-4	0.55	100 / day.	7,393.10
10	122200 / 110 days.	Cost of water supply in case of nurseries are located in private land.	5-12	0.16	1000 / day.	2,150.72
11	122200 / 5 shifts.	Shifting containers weeding, grading and replacing (5 shifts first shifting admissible only after 60 days o fthe formation of the nursery .or (pine 6 shifts admissble From 3rd months on wards.	5-17	4.00	1000/shift	2,444.00
12	88RM or 90 R.M.	Erecting cattle proof fence of Brushwood 1M ht.	5-46	27.00	100 R.M.	24.30
		Part B— Raising Plantations.				
13	700 chains 14 K.M.	Survey and demarcation of boundary lines R.F. as well as R.As. except cost of clearing .	2-1	30.00	R.M.	420 00

(1)	(2)	(3)	(4)	(5)	(6)	(7)
14	~0 Nos.	Fixing boundary of the plantation by planting 100x 15x 15 cm stone pillars in all the surveystones (including cost of stones transport loading and un-loading . Note :— Item 13 & 14 will be permitted for those areas in which the survey station stones were not provided at the time of raising the planetation. The District Forest Officers should inspect and verify it this items are required	2-20	2.00	Each.	600.
15	100 Ha.	Clearing Jungle growth; Light medium(The extent of nature of the growth should be carefully assessed by the District Forest Officer personally before sanction of the estimate)	5-56 5-55	120.00 150.00	Ha.s Ha.s	13,500.00 Average.
16	700 chain	Erecting cattle proof fence of brushwood 1 M. height.	5-46	27.00	100 R.M.	3,780.00
17	100 Ha.	Heaping the debris and and burning them after collecting and stacking the cut materials (that can be disposed off)	5-61	16.00	Ha.	1,600.00
18	1,11,000	Aligning & Marking	5-1	15.00	1,000	1,666.50
19	1,11,000	Digging 300M3 pits in hard gravelly soil (non rainy season).	5-20	130.00	1,000	14,443.00
20	4,09,000 Nos.	Construction of interuP. ted contour trenches of sizes 60CM at the top 40 CM at bottom & 50 CM at depth.	412-9	2.00	per contour	81,800.00
21	122200 Nos.	Transport of containers to planting siteover an average lead 2 K.M. including Avenue plantation (Inclusive of loading and unloading)s Note : If departmental vehicle is availables louding and unlouding may be paid at Rs.10/1000 as per item No. 5-34.	5-29	55.00	1,000 Nos.	6,721.00

(1)		(3)	(4)	5)	(6)	(7)
22	122200 Nos.	Distribution of seedling from foot of hills to steep hill terain by head loads(This should be restricted to hillocks) for karadus distance upto 100m. No rates.	5-31	2.00	1,000	244.40
23	1,11,100	Refilling pits and planting the container plants (For all size of bags) of 30 M³ pits) excluding transport and distribution beyond 100M in hill areas.	5-36	60.00	1,000	6,666.00
24	11,000	For replacement of casualities by reopening the failed pits for all type of soil (including planting).	5-39	85.00	1,000	943.40
25	555500 Nos.50%	Forming semicircular bunds around the plants in the hillocks by collecting stones from the areas and heaping on the lower side to form a revetment (The diameter of the semicircular bund should be IM. The height of the bund at the centre should less than 32 cms and then height at either and shall be 15 cm.)	5-41	110.00	1,000	6,110.50
26	2,11,000	weeding and soil working for IM. dia and 15cm depth around each plans (low hills and karadus)	5-44	110.00	1,000	12,221.00
27	1 No.	Fixing coupe stone of Plantation stone 75×30×10cm including cost, transport chisselling of letters and Planting at site	2-7	27.00	each	27.00
28	2 KM	Forming Jeep track 3M wide except Forestry tanks	5-62	160.00 / 1 KM	1 KM	320.00
29	7000	Dibbling palm nuts in the peripnery of the plantations including collection of nuts transport and planting	5-61	15.00	100	1,050.00
30	L.S.	Construction of checkdam plugging the gullies to arrest erosion, run off etc.,	..	..		1,200.00
31	L.S.	Contingencies such as arutriens pesticides and fungicide etc. instruments etc.,				643.18
						1,85,000.00

ABSTRACT

		for 100 Ha.	for 1 Ha.
PART A	COST of nursery ..	Rs. 31,052.92	310.53
PART A	COST of Plantation ..	Rs.1,53,947.08	1,539.47
PART B	Cost of preparation works. (Operation to be carried out before March) ..	Rs.67,062.42	670.62
PART B	Cost of planting works (Operations to be carried out from April to March)	Rs.1,17,937.58	1,179.38

Cost of raising plantations Per Ha. Rs.1,850

CHAPTER VI.

SOIL CONSERVATION WORKING CIRCLE.

Section 1—General constitution of the Working Circle :

379. *General constitution.*—This is an overlapping there are about 47 kani settlements covering an area of 1257.38 Ha. situated within the catchment aras of Pechiparai, Perunchani and Chittar reservoir. The kanis are doing cultivation, without adopting any soil conservation measures resulting in the loss of valuable top soil. Due to loss of top soil these areas get depleted year after year. Hence soil conservation measures are proposed in these settlement to improve the soil fertility.

380. The existing teak plantations in the division are not as successful as was expected of them. For their age, their growth cannot be said to be satisfactory this may be due mainly to a variety of adaphic factors peasant and incessant adverse influence of biotic factors including cattle. As a consequence most of these plantations are benefit of any undergrowth work the same. Consequently soil erosion is rampant in such plantations.

Section 2—Division of the area :

381. This is an overlapping working circle, Therefore the whole Divisions will come under this working circles. All the kani settlement and Teak plantations raised in this Division will come under this working circle.

Section 3—Method of Treatment :

382. Construction of check dams and constructions of stone walls on contours with rough stone dry packing and semi circular terracing will be carried out in kani settlements.

383. Contour bunding and check dams will be constructed in Teak Plantationst. To provide under growth in Teak Plantations to arrest soil erosion campho Thulsi will be planted.

Section 4—Tabular Statement of works to be carried out ;

384. Construction of check dams and stone walls along contour with rough stone dry packing will be carried out as follows:—

Year.	*Name of Kani settlements.*	*Area.*
(1)	(2)	(3)
1988-89	Thalukumalai	24.90
	Purathimalai (2 bits)	27.49
Do.	Cherukadathukani (2 bits)	27.49
Do.	Pathukani	68.47
1989-90	Kartuvai	51.81
Do.	Vellarakkal	20.36
Do.	Chaphilatjodu	16.19
Do.	Mallamuthan	22.47
1990-91	Poraidam	27.20
Do.	Perumkuruvi	8.66
Do.	Adakadu (2 bits)	14.63
Do.	Thekkadi Tholayadi	12.55
1991-92	Pechiparai Grazing Block Ponamanavillai	1.01

(1)	(2)	(3)
1991-92	Killikonam (4 bits)	33.78
Do.	Modavaipothan	43.31
Do.	Meenachilamadakku	7.60
1992-93	Mugilayadi	5.67
Do.	Koravaikuzhi	20.30
Do.	Arukani	145.10
Do.	Thachamalai	34.53
1993-94	Thottamalai	45.24
Do.	Kalaparai	34.50
Do.	Modıramalai (2 bits)	6.58
Do.	Valayanthucki	6.78
1994-95	Koduthurai	14.17
Do.	Manalikadu (2 bits)	7.08
Do.	Alamparai	28.87
Do.	Ettamkunnu	17.34
1995-96	Vilamalai	22.66
Do.	Mangamalai	23.39
Do.	Andipothai and Thanikuzhi	42.45
Do.	Valiamalai	46.91
1996-97	Puduparai	12.29
Do.	Chellamkunnu	3.79
Do.	Ambuduchunai	5.83
Do.	Kayakarai	21.35
1997-98	Kaduvavetti	4.45
Do.	Keeriparai	26.50
Do.	Vekkalimoodu	29.02
Do.	Pravilai (2 bits)	50.39
1998-99	Villeri (2 bits)	55.04
Do.	Koovaikal	38.02
Do.	Maramalai	20.34
Do.	Velipila (3 bits)	54.64
1999-2000	Vettamalai	6.69
Do.	Therimedu kanl	6.07
Do.	Vellambi	48.57

In Teak Plantations the work of construction of check dam, contour trenching will be taken up as follows. As an additional safe-guard against soil erosion, planting of camphor tulsi in all teak plantations as an under growth in prescribed. These annuals when mature will not only act as soil binders, but will also give the highly valuable camphor after due processing which has a readymarket all over the country for religoius purposes.

It is difficult to procure the seeds of camphor tulsi (Ansimum camphora). The seeds can be obtained from Cinchona Department. The seedlings can be raised in Polythene bags to (8x15 size) Ceretas watering well spoil the seedlings. The plantation can be tried on experi mental basis in small patches. It needs highly intensified protection and care.

KULASEKARAM RANGE

Year. (1)	*Location.* (2)	*Name of Plantation.* (3)	*Area* (4)
1988-89	1943 Veerapuli R.F.	Manalodai	19.4
Do.	1947 Veerapuli R.F.	Manalodai	23.5
1989-90	1958 Thodalikadu R.F.	Kodayar R.A.	44.5
Do.	1958 Do.	Do.	39.7
1900-91	1960 Kilamalai R.F.	Kodayar R.A.	49.4
Do.	1961 Do.	Do.	61.5
1991-92	1962 Kilamalai R.F.	Do.	69.2
Do.	1963 Do.	Do.	28.3
1992-93	1964 Kilamalai R.F.	Do.	56.9
Do.	1965 Do.	Do.	28.3
1993-94	1966 Kilamalai R.F.	Maruthamparai	34.0
Do.	1967 Do. Bit I	Do.	40.1
1994-95	1967 Kilamalai Bit II	Maruthamparai	15.8
Do.	1968 Kilamalai 2 bits	Do.	48.3
1995-96	1969 Kilamalai R.F.	Do.	43.5
Do.	1970 Do.	Do.	41.1
1996-97	1971 Kilamalai R.F.	Do.	23.1
Do.	1972 Veerapuli R.F.	Paraliar Teak	17.4
1997-98	1972 Kilamalai R.F.	Kodayar TRH	18.7
Do.	1973 Do.	Do.	19.2

ALAGIAPANDIAPURAM RANGE

1988-89	1942 Thadikarankonam Teak R.A. ...	.. ..	4.2
Do.	1943	Do.	10.1
Do.	1944	Do.	21.0
Do.	1945	Do.	24.00

(1)	(2)	(3)
1989-90	1946 Thadikarankonam Taek R.A.	29.9
Do.	1954 Paraliar Teak R.A.	38.9
Do.	1957 Do.	49.4
Do.	1958 Do.	10.5
1990-91	1959 Thadikarankonam Teak R.A.	42.9
Do.	1959 Do.	39.7
Do.	1959 Paraliar	70.8
Do.	1960 Do.	51.0
1991-92	1960 Thadikarankonam	54.2
Do.	1961 Do.	21.4
Do.	1961 Paraliar	28.7
Do.	1962 Do.	28.3
1992-93	1962 Thadikarankonam	29.5
Do.	1963 Kalkulam Block I	48.5
Do.	1963 Kalkulam Block II	44.5
Do.	1963 Paraliar	26.7
1993-94	1964 Paraliar	39.9
Do.	1965 Kolikaranthottam	43.7
Do.	1965 Paraliar	31.2
	1966 Pasaliyar	24.7
1994-95	1966 Thadikarankonam	40.4
Do.	1966 Perunchani water spread area 3 bits	15.8
Do.	1967 Thadikarankonam	44.5
Do.	1967 Paraliar	23.1
1995-96	1968 Paraliar	29.5
Do.	1968 Thadikarankonam	17.3
Do.	1969 Neduvilai	10.0
Do.	1969 Paraliar	32.6
1996-97	1970 Paraliar	29.5
Do.	1971 Thadikarankonam	2.5
Do.	1972 Paraliar	35.3

Do.	1972 Paraliar	15.0
1997-98	1975 Thadikarankonam	2.2
Do.	1978 Vellambikani :	24.4
Do.	1978 Maramalai :	7.8

Section 5— Other Regulations :

385. The Range Officer will keep on account of check dams and contour tenching constructed in all the plantations of his range. This should form part of the TRC when he hands over charge of the range to his successor on his transfer.

CHAPTER VII.

CRAZING WORKING CIRCLE.

Section 1—General constitution of the working circle.

386. *Object of Management.*—The object is to provide adequate pasture for the cattle in the villages adjoining the forests.

387. *General constitution.*—The working circle will include all the forest areas throughout the division with the exception of such of those areas closed to grazing for silviculrural reasons or in the interest of wildlife preservation or as a sequence of incendiarisam.

388. *Closure to Crazing.*—All the plantations will be closed for a period 5 years from the year of formation. The following areas are permanently closed to grazing.

ALAGIAPANDIPURAM RANGE :

		Area in Hectares.
1	Muthukulivayal valley in compartments in Veerapuli reserve ..	4.00
2	Thadikarankonam watch station 1975-76	2.20
3	Balamore road softwood coups 1978-79	4.00
4	Kalikesam elephant camp area	16.00
5	Mohandragiri pulpwood plantations 1981	6.00
6	Balamore area 1961 in Alagiapandiapuram Range	12.50
7	Balamore 1970 mixed plantations raised .. .. in 1983	7.70
8	1984 Kadukathittai albizzia plantations	27.50
9	1985 Albizzia plot in Asambu R. F. near Mahandragirii ..	27.70
10	1985 Albizzia near wood lands estate	6.0
11	1985 Albizzia plot above Balance estate	22.48
12	1986 Valayuthuvayal albizzia plot:	2.04
13	1986 Albizzia plot at Balamore Veerapuli RF.	23.50

BOOTHAPANDI RANGE :

1	Thadagamalai beat tamarind 1978-79	5.00
2	Casuarina plantations at Kovalam 1979-80	1.25
3	Tamarind plantations at Kottakarai 1979-80	22.00
4	Mahandragiri reserve forest Panangudi Eucalyptus hybrid 1983 plantations.	10.00
5	1985 Albizzia plot in Velimalai R.F.	10.00
6	1986 Odai plot Thrkumalai R.F.	63.00

KULASEKARAM RANGE :

1	1968 Albizzia falcata plot failed patches 1978-89	14.20
2	Chenancode albizzia 1975	4.30
3	1972 Veerapuli Softwood 1978-79	2.50
4.	1969 Veerapuli match wood coupe 1981 Plantation	12.30
5	1983 Mugiladi albizzia plantations in Kulasekaram Range ..	5.00
6	1984 Thottiamalai Kulasekaram Range	20.0
7	1983 Eucalyptus plantations, Pechiparai	7.50
8	1985 Albizzia plot at Chanancode	18.00
9	1985 Albizzia plot at Vakkalimoodukani	10.00
10	1986 Albizzia plot near Korvaikuzhi	5.50
11	Albizzia plot near Kalial beat	3.00
12	1986 Albizzia plot near Ambudunjunaikani area.:	1.70
13	1986 Albizzia plot near Vattavilai	1.60
14	1986 Albizzia plot provilaikani area Bit I:	3.70
15	1986 Albizzia plot at Chanancode	15.00

389. *Other Forest Divisions.*—An extent of 5,765.70 hectares of rubber plantations occuring within the jurisdiction of this division are the exclusive control of the Managing Director, Arasu Rubber Corporation, Nagercoil. Similarly an extent of 100 hectares of clove plantation are under the control of a separate Divisional Forest Officer.

390. *Incendiarium.*—Usually fires in these forests are man made. Are subject to incendiariam may be closed to grazing subject to the conditions that the aggregate of the areas so elected at a time does not exceed 500 ha. and provided that he District Forest Officer sends a report to that effect to the Collector and the Chief Conservator of forests through the Conservatior of Forests. This course will be adopted when the District Forest Officer considers that the burnt area is so etensive and damage to the forest so serves as to warrent closures to grazing.

391. *Grazing Notification.*—Every year, not later than May, a notification regarding grazing, specifying the areas closed to grazing and the conditions regulating the grazing will be published in the district gazette.

Section 2—Method of Treatment :

392. *Grazing Unit.*—The whole division forms one grazing unit and accordingly a grazing permit issued at any one place is valid for the whole division.

393. *Regulation of grazing.*—All animals except goats may be licenced to graze inside the forest, Grazing will be opened to cattle covered by grazing permits. Cattle taken along recognised paths and roads through estates and patta lands inside the forest will not be regarded as tresspass. No distinction shall be made as local and foreign cattle in any part of the division for any purpose. Illicit grazing should be put down by constant vigilance and by arranging special parties espacially goat browsing as there seems to be some sickness in this matter.

394. Grazing permits will be issued by the Forest Ranger and Foresters as per rules in force. Payment of permits must be made only to those Officers direct. All permits are printed and each permit is issued for one animal or for more than one animal of the same class. The number of animals and the value payable are stamped in ink on each permit before issue.

395. All cattle will be charged at the rates noted below as per latest Government orders.

Description of cattle.	*Rates per head.*
(1)	(2)
Elephant	30.00
Cows, bulls, calves over six month only	2.00
Sheep	1.00
Ass or horse	4.00
Buffaloeas and calves over six months old	4.00

396. A calf under six months old and accompanying its mother but not driven independently will be allowed to graze fee. Calves admitted at the begining cf the year as being under six months old should pay half rates for the second half of the year begining from the Ist January 1987.

397. No permit will be issued for goats which are expressly prohibitted from tresspassing in any reserved forests.

398. The grazing fees prescribed above are liable to be enhanced in any area in case of fires or if grave or numerous forest offences have been committed.

399. Penning of cattle within the limits of the grazing working circle in localities approved of by District Forest Officer will be permitted to all grazing permit holders on applications made to the Ranger or Forest Officer who will issue the penning licence to each applicant. Penning of cattle in reserved forest panchayat and, exc State Forest without a penning licence or in localities not approved by the District Forest Officer is prohibited and the grazing permit covering cattle so penned will be liable for confiscation. In case fires or illicit fellings occur in the vicinity of any pen the penning licence issued thereof will be cancelled. The fees for penning licence will be Re. 0.50 per cattle.

400. Planting of fodder species in the inter face area of forests shall be undertaken in Mahendragiri lower slopes and in Panangudi Reserve Forests. Acacia planifrons shall be raised in rows at interval of 3 metres in between row and with an espacement of 2 metres.

401. A few percelation ponds should be formed to improve the water table and also to provide drinking water for the cattle in all the Reserved forests.

402. *Concessions.*—The kanis will be given free grazing permits for their own cattle.They can grass their cattle anywhere except in the areas specifically closed to grazing. None other than these kenis will be allowed free grazing.

403. *Control Records.*—Control forms which accompany the working circle should be posted soon fter the close of each financial year. The posting of control map is a matter of vital importance and must receive the personal attention of District Forest Officer.

CHAPTER VIII.

TRIBAL RESOURCE (KANIS) DEVELOPMENT WORKING CIRCLE.

Section 1 – General constitution of the Working Circle.

404. The object of this working circle is to improve the living condition of Kanis by providing basic infrastructure and to bring as many kani tribals as possible above proverty line.

405. *General constitution*.—The working cricle consist of all the 47 kani settlements in the divisions.

406. *Area*.—The total areas under kani settlement in Kanyakumari Division is 1257.38 Ha.

407. *Character of Vegetation*.—The main crop cultivated by Kanis is Tapioca, Banana, Arecanut and Jack. On account of repeated cultivation in steep slopes without adopting soil conservation messures and due to washing away of top soil, the fertility of land has been depleted and the yield of tapioca and other crops has come down considerably.

Section 2—Division of the area :

408. There are 47 Kani settlements inside the forest area.These 47 Kanai settlements are situated within the catchment areas of Perunchani, Pechiparai and Chithar reservoir. In the 47 Kani settlements, there are 864 families at present with a population of 3,560.

STATEMENT SHOWING THE LIST KANI SETTLEMENT AND OTHER DETAILS.

Serial number and name of reserve forests.	*Name of kani settlements.*	*Area in Ha.*	*Location.*
(1)	(2)	(3)	(4)
1 Klamalai .	Thalukumalai Purathimalai (2 bits).	24.90	Near Purathimala
2 Do. .	Do.	27.49	Adjacent to Vellai kani and 1956 Regeneration area.
3 Do. .	Cherukadathukani (2 bits).	68.47	Near State Boun with Kerala and thar Rubber Division
4 Do. .	Pathukani	51.81	Adjacent to Arukani
5 Do. .	Kartuvai	8.10	Near Thalakumalai Pathukani.
6 Do. .	Vellarakkal	20.36	Near Chithar dam adjoining 1966 Regeneration area.
7 Do. .	Chappilathodu	16.19	Near Mylar coupe 57 adjacent to Porai Kani.
8 Do. .	Maliamuthan	22.47	Near Puraidam a Adakadu kanis Mylar coupe 50.
9 Do. .	Poraidam	27.20	In between Adakadu Chappilathoduk.

(1)	(2)	(3)	(4)
10 Klamalai	Perukuruvi	8.66	Above Poraidam Ka
11 Do.	Adakadu (2 bits)	14.53	Adjacent to Chit Rubber coupe and Perumkuruvi.
12 Do.	Thekkadi Tholayadi	12.55	Near Cherukadathu and adjoining boundary of Kerala
13 Do.	Pechiparai Grazing Block Ponamanavilai.	1.01	Near Cocoa plot B
14 Do.	Killikonam (4 bits)	33.78	Adjoining 1961 wood plantation.
15 Do.	Modavaipothan	43.31	North of Pechiparai adjoining to Kall Rubber Division.
16 Pechiparai Grazing Block.	Neenachilanadakkus	7.59	Near cocoa plot bit-
17 Veerapuli	Mugilayadi	5.67	Adjoining 1969 soft Regeneration area 10.5 ha.
18 Veerapuli	Koravaikuzhi	30.20	In between 1957 and 59 Softwood Regenena tion area.
19 Klamalai	Arukanis	145.10	Adjacent to Pathuka and Chithar Rubber coupe.
20 Veerapuli	Thachamalai	34.53	North of 1971 Softwood regeneration area adjoining Pechiparai Water spread area.
21 Veerapuli	Thottamalai	45.24	East of 1970 Softwo Regeneration ar and adjoining Pech parai water spread area.
22 Do.	Kalaparai	34.50	Near Thachamalai kani and rock hill estate.
23 Klamalai	Modiramalai (2 bits)	6.58	Near Mylar coupe 59 and Velipilai kani.
24 Veerapuli	Velayamthuki	6.78	In between 1957 and 1972 softwood plantations.
25 Do.	Koduthurai	14.17	Near lower Kodayar and adjoining Kuthiar Rubber Division.
26 Do.	Mamalaikadu (2 bits)	7.08	Do.

Serial number and name of reserved forests.		Name of kani settlements.	Area in ha.	Location.
(1)		(2)	(3)	(4)
27	Veerapuli	.. Alambarai	28.57	Adjoining to 1964 and 1965 softwood plantation and Manalodai Rubber coupes.
28	Do.	.. Ettamkannu	17.34	Within 1971 softwood Regeneration area and adjoining 1967 softwood regeneration area.
29	Do.	.. Vilamalai	22.26	Near Mylar coupe 65 and adjacent Pechiparai water spread area.
30	Do.	.. Mangamalai	23.39	Near Mylar coupe and near lower Kodayar P.H. II.
31	Do.	.. Andipothai and Thanikuzhi.	42.45	Near Pechiparai Kadambamoodu and adjoining 1957 softwood regeneration area.
32	Do.	.. Valimalai	46.91	In between 1964 and 1966 softwood regeneration areas.
33	Do.	.. Puduparai	12.29	Adjoining Manalodai Rubber coupe 26.
34	Do.	.. Chellamkunnu	3.79	Adjoining 1960 and 1961 Softwood plantations.
35	Do.	.. Ambudunchunai	5.83	West of Kayakaraikan-South of Mattamalai kani area adjoining reserved forest boundary.
36	Do.	.. Kayakarai	21.36	Adjoining 1946 Manalodai teak regeneration area.
37	Do.	.. Kaduvavetti	4.45	Adjoining 1959 Kaduvavetti softwood regeneration area.
38	Do.	.. Keeriparai	26.60	Near Manalodai rubber plantations adjoining vekkalimoodu kani.
39	Do.	.. Vekkalimoodu	29.02	Adjoining Keeraparai-kani and Manalodai rubber plantations.
40	Do.	.. Pravilai (2 bits)	50.39	Near Manalodai rubber coupe 28 and adjoining 1963 softwood regeneration area.
41	Do.	.. Villeri (2 bits)	55.04	Near Manalodai Rubber coupe 27 and adjoining 1963 softwood regeneration area and pravilaikarai.

42	Veerapuli	.. Koovaikal	38.02	Adjoining 1967 Paraliar teak regeneration area and Paraliar Rubber plantations.
43	Do.	.. Maramalai	20.34	Near Chithar river and adjoining Thattaramalai kani.
44	Klamalai	.. Velipila (3 bits)	54.64	West of Mothiramalai kani and adjoining Mylar Rubber coupes.
45	Veerapuli	.. Vettamalai	6.69	Near Ambudunjunaikani south of Mudilayadi kani.
46	Do.	.. Therimedu	6.07	South of 1963 softwood regeneration area and adjoining Manalodai Rubber plantations along with Manian kuzhi Kalikesam road.
47	Veerapuli Reserved forest and Asambu proposed reserved forest.	Vellambi	48.57	Near 15th mile stone of Balamore.

Section 3—Analysis :

409. The kanies were doing shifting cultivation in the past, prior to 1911. But during 1911 the Travancore Government allot ed kani settlements by setting apart certain forest areas occupied by them as kani settlements and they are now confined to these kani settlements within the Reserve Forests of Kanniyakumari district. The kani hill tribes were permitted to grow food crops and other fruit bearing trees inside kani settlements and they were allowed to enjoy the area, due ownership however resting with the forest department. The kani settlement lands are Government lands under revenue classifications as reserved forests and are managed by Forest Department. Kanis cultivate in their settlements crops like tapioca, banana, arecanut and jack, etc.

410. Kanidars are socially and economically very backward. They lived in small huts. The main crop cultivated by the Kanis is tapioca and banana. On account of repeated cultivation in steep slopes without adopting soil conservation measures, the fertility of land is very much depleted. The rate of annual income has considerably come down and economic status is also very low. Most of them live below the poverty line. At present their annual income from their land under their possession is only about Rs. 500 to 700 per family.

Section 4—Method of Execution of work :

411. The prescriptions made here are on the lines of detailed proposals sent by the Chief Conservator of Forests to Government (Social Welfare Department). At the time of writing of this plan Government is seized of this proposal. Therefore as and when the scheme is sanctioned the work proposed can be taken up. However to improve the economics conditions of the Kanis, the following schemes are proposed, These schemes may be turned so as to merge with Government orders which is expected to be issued shortly.

I. Scheme for providing Basic Amenities.—

(*a*) Saving the tribals from the clutches of money lenders by way of proposing necessary financial assistance.

(*b*) Construction of Residential Houses for Houseless Kanis.

(*c*) Providing drinking water facilities.

(*d*) Providing Medical facilities by constructing a Hospital with mobile medical facilities.

(*e*) Formation of new roads for easy communication.

(*f*) Providing employment opportunities by absorbing them in Forestry Operations and Arasu Rubber Plantation Corporation.

(*g*) Execution of Soil Conservation works by construction check dams and contour walls wherever necessary.

II. Scheme to build up economic resources giving sustain income throughout the year—

1. Planting of 400 rubber trees to each family.
2. Planting 10 cloves trees to each family.
3. Planting 25 silk cotton trees to each family.
4. Planting 25 alibizzia falcataria trees in each Kanis land.
5. Planting 50 pepper vines on the silk cotton and albizzia trees in each kanis land.
6. Planting 50 pine apple quackers in each kanis land.
7. Planting good delicious edible variety of jack trees in each kanis land.
8. Planting 20 good high yielding variety of coconut in each kanis land.

Scheme for Basic Amenities.

Saving the kanis from the clutches of money lenders.—

412. Mostly all the kanis are in the habit of borrowing money from outsiders and in turn sell the harvested commodities from their lands at a low price to those persons from whom they have borrowed money or lease out the land to the money lenders for carrying out cultivation. On account of their lethargic attitude and their borrowing habit the kanis are like bonded labourers under the outsiders who reap the benefits and income from the kani area and the kanis are always below the poverty line. If the real benefit of the proposed scheme is to reach the kanis first of all the kanis are to be freed from the clutches of outside money lenders by repaying the loan on behalf of kanis by any lead Bank. Before implementing the proposed scheme the debits of the kanis should be settled, and for which long term Bank loan should be obtained from nationalised banks and loans should be cleared. Wied publicity by way of beating Tom Tom and also advertising in local news papers inviting details of loans given to the kanis will be collected and its validity will be verified. Such loans shall be cleared and the tribals freed from the clutches of money lenders. The Forest Department should give guarantee to the banks for repayment of the loans after five years. A bond also will be executed from the kanis and whenever there is income from the kanilands, he should be asked to repay the loans on instalment basis.

totally there are 47 kani settlement consisting of 864 families, and a sum of Rs. 4 lakhs will be required at a tentative rate of Rs. 500 per family. The exact number of families and required amount of loan to be seettled will be enumerated at the time of distribution of loan. After settling the loan the kanis will be freed from the clutches of money lenders. This can be done in the first year of implementation of scheme.

(*b*) *Construction of residential houses for houseless kanis* :

413. There are 864 families in the 47 kani settlements and some of the families have been provided with houses constructed under N.R.E.P. and I.R.D.P. Schemes and under Tribal Welfare schemes. The kani families to whom there are no houses and who are residing in thatched sheds which are exposed to hevayrain and wind have been enumerated and totally 676 houses will have to be constructed under the tribal welfare scheme. Each house will be constructed at a cost of Rs. 12,000 with a dimension of 6m. × 4 metres and of 24m plinth area. Timber for the construction of houses will be given free of cost by the Forest Department under free grant. The wind fallen and dead trees available in the kani settlements will be used for construction of houses. Walls will be constructed with Randum rubble in mud mortar and pointed with cement mortar and roofing will be with Mangalore tiles. For constructing houses a sum of Rupees 81,12,000 will be required and this work of construction of houses will be done in three years at the rate of 226 houses every year.:

LIST OF KANI SETTLEMENT SHOWING THE NUMBER OF HOUSES AND POPULATION.

(7)

Serial number and name of kani settlement.	*Extent in ha.*	*Population.*	*Number of families.*	*Number of houses constructed.*	*Number of new houses to be constructed.*	*Well.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Thalakumalai .. .	24.90	153	33	10	23	..
2 Purathimalai .. .	27.49	121	21	..	21	..
3 Cherukadathukani .	68.17	200	66	24	42	..
4 Pathukani . .	51.81	92	28	..	28	..
5 Kartuvai .. .	8.10	30	8	..	8	..
6 Vellarakkal .. .	20.36	51	10	..	10	..
7 Cheppilathode ..	16.19	86	19	11	8	1
8 Mellamuthan .. .	22.47	67	16	..	16	1
9 Poraidam . .	27.20	26	7	..	7	..
10 Perumkuruvi	8.66	23	7	..	7	..
11 Adakadu	14.63	10	5	..	5	..
12 Thekkaditholayadi .	12.55	117	27	..	27	..
13 Ponmavilai . .	1.01	46	10	10	.	..
14 Killikonam . .	33.78	40	14	10	4	..

(1)	(2)	(3)	(4)	(5)	(6)	(7)
15 Madavapothai .	43.31	106	21	..	21	1
16 Meenachilamadakku	7.59	8	2	..	2	..
17 Mugilayadi . .	5.67	20	4	..	4	..
18 Korvaikuzhi . .	20.30	80	15	..	15	..
19 Arukani. . .	145.10	410	106	20	86	1
20 Thachamalai . .	24.53	103	23	..	23	..
21 Thottamalai . .	45.24	110	18	..	18	..
22 Klapurai . .	34.50	77	21	..	21	..
23 Modiramalai . .	6.58	35	6	..	6	..
24 Valayamthucki ..	6.78	40	13	..	13	..
25 Koduthurai . .	14.17	41	7	..	7	..
26 Manalikadu	7.08	42	9	..	9	..
27 Alamparai . .	23.57	40	15	15	..	..
28 Ettamkunnu . .	17.34	35	10	..	10	..
29 Vilamalai . .	22.66	49	9	..	9	..
30 Mangamalai . ..	23.39	45	12	12	..	1
31 Andipothai and Thani-s kuli.	42.45	135	30	10	20	..
32 Valiamalai	46.91	190	46	..	46	..
33 Puduparai	12.29	15	3	..	3	..
34 Chellamkunnu .	3.79	11	4	..	4	..
35 Ambudunjunai .	5.83	8	2	..	2	..
36 Kayakarai	21.35	39	11	3	8	..
37 Kaduvavetti	4.45	9	2	..	2	..
38 Keeraparai	26.50	23	6	..	6	..
39 Vekkalimoodu .	28.02	42	12	..	12	..
40 Pravilai	50.39	120	24	10	14	..
41 Villeri . ..	55.04	124	27	..	27	..
42 Korrvaikal . ..	38.02	75	19	12	6	2
43 Maramalai . .	20.34	30	6	..	6	..
44 Velipila . .	54.64	198	51	3	48	1
46 Vethamalai . .	6.69	15	4	..	4	1
46 Therimedukanı .	6.07	48	9	..	9	..
47 Vellambı . .	48.57	176	46	37	9	1
	1,857.38	3,580	864	138	676	9

(c) *Provding medical facilities by constructing dispensaries with mobile medical facilities* :

414. At present there are no proper and adequate facilities to look after the health of the poor tribal kanis. Many of them are always suffering from some disease or another and there are quite a few deaths in kani areas due to lack of medical facilities. They have to walk long distance even for simple treatments and due to in ignorance and illiteracy the kanis do not avail the medical facilities available at Kulasekaram and Nagercoil. Hence it is proposed to construct a dispensary at a central place. (Pechiparai). In addition to this one ambulance van can be purchased for using as a mobile medical van so that the Medical Officer can also have a periodical visit to each kani settlement. The approximate cost is Rs. 3 lakhs.

(d) *Providing drinking water facilities to the tribal kanis* :

415. At present there is no protected watersup ply in any kani settlement and they are drinking the polluted water available nearby and thereby they are exposed to lots of deseases. In some kani settlements there are wells and n most of the settlements they take water from the adjoining streams or ponds . In 30 settlements there are no wells. Hence one well shall be dug in each kani settlement wherever there are no wells now. One over head tank shall also be constructed with pipe lines in all kani in ands. It is proposed to sink wells or divert the stream water through pipe lines in 30 settlements at the rate of Rs. 10,000 for each settlement. This work can be done in 3 years, covering 10 settlement every year. The work should commence from the year 1988-89.

e) *Formaiion of new roads for easy communication and approach to kani settlements* :

416. At present there is no easy approach or accessibility to certain kani settlements as there are no road facilities. For easy access and communications it is proposed to form new fair weather roads over 15 km. so that the kanis can easily transport their commodities to the market and at times when any kani is seriously ill, medical ambulance van can also easily reach the kani settlements for taking care of the health of the ailing kanis . It is proposed to form new roads in the following kani settlements:—

Ist year 1989–90 Perunchani to Kayakarai settlement. ..	5	K.m.
IInd year 1990-91 Therimedu Kani Settlement to Mohilday Kani Settlement	4	K.m.
III year 1991–92 Kulasekaram to Kattuvilai Settlement	4	,,
IVth year 1992-93 Kathavilai to Ambudunjunai kani settlement.	2	,,
	15	,,

(f) *Providing employment oppertunities* :

417. Considering the area of the settlement, population of kanis is more and some kanis are without any job, idling the time and are starving sometimes. At present they are going for work as casual labour in private estates for a nominal wage. On a over all census of population taken now nearly 200 adult members are with out work and there is srplus manpower. In order to provide employment opportunities to the surplus manpower in kani settlements it is porposed to request the Arasu Rubber Plantation Corporation to absorb the unemployed kanis as casual labour and subsequently make them as permanent labour in Arasu Rubber Plantations Corporations. Each kani will be getting Rs. 21 per day if they get employed in Arasu Rubber Plantations Corporations and 250 families will be benefited by this proposals. Daily employment to kanis should be given in the departmental work until their absorption.

g) Execution of soil conservation work by constructing Check dam and contour walls with rough stone dry packing :

418. At present there is lot of soil erosion and the soil has been depleted due to washing away of top soil by torrential rains. In order to build up soil, the erosion has to be arrested by constructing checkdams and construction of stone walls along contour with rough stone dry packing. Such works shall be done in all main settlements.

Schemes to build up the economic resources by planting horticultural crops in kani areas :

(1) *Planting Rubber seedlings in kani areas :*

419. Kanyakumari district is ideally suitable for growing rubber trees on account of elimatic and soil conditions and well distributed rain. As the income of the kanis derived from tapioca and banana is very meagre at present, it is propose to plant 400 rubber trees in the land of each kani family. Good high yielding variety clones of rubber like PRIM 600, GTI and PB6/51 will be planted at the rate of 400 trees for a family so that out of the 400 rubber trees after seven year 1,000 kg. of latex can be expected in a year. By selling the 1,000 kg. of latex in one year, and after deducting the maintenance and tapping cost, a net revenue of Rs. 6,500 to 7,000 can be expected in a year. Forest Department will raise rubber nursery with high yielding variety clones and maintain the rubber trees for six years. From the 7th year when the trees attain a girth of 50 c.m., tapping will be commenced so that from 7th year onwards, there will be income from rubber. After 10 years a regular oncome of Rs. 7,000 can be expected for one family. The cost of raising of 400 tress of rubber including maintennace of the trees for six years by applying fertiliser and pesticides and fungicide will come to Rs. 17,187.50 There will be a perennial sustained income throughout the year if rubber is pl.anted and each family will benefited by getting an average income of Rs. 6,000 to Rs. 7,000 per annum.

(2) *Planting 20 cloves plants in the land of each kani family :*

420. Eugenia caryopolyllata is the clove of commerce. Cloves is a sensitive delicate tree and the unopened floral bud called as clove is a popular spice from which Eugenol oil is extracted and which is used in medicines. Clove can be raised easily in the settlement of forest areas of Kanyakumari district on account of topical cumid climate with an annual rainfall of 150 to 200 cm. prevailing in the forest areas of Kanyakumari district. Already there are lot of clove trees in Kanyakumai district and they are coming up very well i these tracts.It is porposed to plant 20 clove trees 5 metre apart in the land of each family. Clove seedlings will be raised and planted and maintained by Forest Department. Each clove tree will start flowing-from 6th Year of planting , Yielding 300 to 500 grams of dried cloves from 6th year to 10th year. From the 10th year onwards from one clove tree one kg. to 2 kg of dried cloves will be obtained upto 60 years. At present the dried cloves are being sold at the rate of Rs. 150 per kg. and dried leaves are sold at Rs. 4 per kg. From 6th year to 10th year, one clove tree will yield ½ kg. and each tree will fetch Rs. 75 and for 20 trees each family will get Rs. 1,650 in a year. After 10th year each family will get Rs. 5,600 from 20 trees at the rate of 2 kg. per tree. Thus the economic resource of the kanies will be much improved even if one family has got 20 cloves trees. Hence it is proposed to raise 20 cloves trees in the land belonging to each family.

(3) *Planting 25 Singapore kapok silk cotton trees in the land belonging to a family :*

421. The floss obtained from the pods of Singapore kapok trees is in great demand and there is good market for the silk cotton floss. There are high yielding varieties of silk cotton trees , with longer and bigger pods like Singapore Kapoks which will yield nearly 1,000 pods per tree after 10 years. In the initial stage, five years after planting the trees come to bearing and the intial from 6th year to 10th year the tree will yield 100 to 500 pods and after 10 years 700 to 1000 pods collected from a silk cotton tree. From 6th year to 10th year the income will be Rs. 25 to 50 per tree and after 10 years there will be steady income of Rs. 100 per tree as the pods are being sold at Rs. 150 per 1,000 including the cost of collection 1,000 pods will be sold for Rs. 150. Hence it is proposed to plant 25 tree in the land of one family, the economic status will be much improved.

4) *Planting* 25 *albizzia falcatoriia trees in the land of each family* :

422. There is great demand for albizzia falcatoria wood as the albizzia logs are very much used in manufacturing catamarans by fisherman. Albizzia falcatoria tree is a tropical fast growing softwood tree which comes only in Kanyakumari district and even private people are raising albizzia in patta lands on account of the fast growing nature of the species and on account of the demand for the wood among fisherman for catamarans and for match splints. On account of the multiple use of the species lots of people are raising the trees in patta lands. Within 10 years the trees attain a girth of 120 to 150 cm and a height 15 to 18 metres, and from one tree 1 M^3 of timber and 250 kg. of top ends will be obtained. Out of timber a revenue of Rs. 500 per M^3 and for top ends a sum of Rs. 50 per tree will be obtained For 25 trees a revenue of Rs. 13,750 will be obtained in 10 years.

(5) *Planting* 50 *pepper vines in the land of each kani family* :

423. Pepper limits itself to very narrow ranges of climate and soil. Being a native of Malabar or south west coast of India it thrives well in a hot humid climate. Kanyakumari district is ideally suitable for raising pepper. There are high yielding varieties of pepper like Panniyar hybrid variety and this variety commences yielding from the second year of planting itself. This Panniyar-I variety is pre-dominantly bisexual. Maximum yield per vine of this Panniyar I veriety is 10.5 Kg. and minimum yield is 5.33 Kg. and an average yield of 3 Kgs. of dried pepper will be obtained per vine. The pepper vines can be easily propagated on the silk cotton and albizzia trees and other trees in the kani settlements. It is proposed to plant 50 pepper vines in the land of each kani family to augment the economic sources of kanis. Minimum yield of one Kg. of dried pepper per vine from vth year and 2 kg. from sixth to seventh year 2½ kg. during eighth and nineth year and 3 kgs. of dried pepper from tenth year to twentieth year can be expected. If 50 vines were planted and cultivated each family will be getting 100 to 150 kg. of pepper and revenue of Rs. 2,000 to Rs. 3,000 will be obtained from 6th year to 20 years.

(6) *Planting* 50 *Pine apple suckers in the land of each kani family* :

424. The pine apple (Ananas) is a perennial monocarpic herb and each stem flowers only once and dries after fruiting and a side shoot then takes over. Pine apple yield a compound fruit and on top of the fruit there ia s crown of leaves which contimue to grow until the fruit is nature and the crown of leaves can be used for propagation. Pine apple fruit is used for making juice, chunks and dice and fruit salads, sugar syrup, alchohal and citric acid. The pine apple fruit contains 80 per cent water, 12 per cent sugar and the rest protiein and Vitamin A and C and there is good demand in the market, Each fruit can easily fetch one rupee. In order to improve the economic resource of the kanis it is proposed to plant 50 pine apple suckers in each kani land as the area is wholly suitable. The available waste area will be utilised for planting pine apple. From second year onwards, the plant will come to bearing and if 50 plants were planted 50 fruits will be obtained in the second year. During third year 100 fruits will be obtained and in IV to VIth year 125 fruits and after VIIth year 200 fruits can be obtained. By selling fruit every year the kani family can get Rs. 100 to Rs. 200.

(7) *Planting of good edible jack fruit trees in kani lands* :

425. Artocarpus heterophyllus or jack fruit tree is an evergreen tall tree which yield the biggest of cultivated fruits. The jack fruit is delicious and sweet and there is great demand for good sweet edible fruits. Good variety of jack ruits are even sold for Rs. 8 to Rs. 10 and Kanyakumari District is ideally suitable for raising jack. In order to improve the economic conditions of the kanis and to have a multiple source of income it is proposed to plant jack trees in the available land of each kani family. Good seedlings will be raised and planted in 45 cms pets 7 metres apart After eight year one tree will yield 5 fruits at an average and after 10 years more than 10 fruits can be expected and after eleventh year 15 fruits at an avarage can be expected and each fruit will fetch Rs. 8 After 10th year the income will be expected. Depending upon area available 5-10 trees may be planted in each kani land.

(8) *Planting coconut in Kani land at the rate of 20 trees to each family* :

426. The coconut palm botanically called as Cocos sucifora is one of the most useful plants in the world and it is the most important of all cultivated palms. The coconut palm has been known to exist in most regions of the tropics, from prehistoric times. The coconut palm is monocious, producing both male and female flowers on the same inflorescence. Kanyakumari district is ideally suitable for raising coconut. On account of the variety uses of coconut there is good demand for nuts and each nut is sold for Rs. 1.50 to Rs. 2. To improve the economic source of the kanis and considering the suitability of the area and considering the market value of coconut it is proposed to raise 20 coconut trees in each kani land. Good high yielding variety of T and D hybrid variety seedlings will be purchased from horticultural farm and will be planted in the kani lands.

427. The T and D hybrid variety will start bearing from seventh year to eighth year when 5 coconuts per tree can be expected and each kani family can get 10 coconuts which will fetch Rs. 150 from 10th year onwards. Each tree will yield 50 nuts and each family will get 1,000 nuts a year on an average and a revenue of Rs. 1,500 will be obtained. From 12th year onwards 100 coconuts per tree per year can be expected and each family will get 2,000 nuts which will fetch Rs. 3,000 every year.

General :

428. Though planting of a variety of commercial and horticultural trees have been prescribed planting of these will be done in each kani land subject to availability of space and the willing co-operation from the kanidars. If some kanis are not willing they should be gently persuaded explaining in detail the monetary benefits that are likely to accrue in course of time.

ANNUAL INCOME AND EXPENDITURE STATEMENT.

Serial number and Species.	Qty.	1st year. Yield.	Expenditure.	Income.	2nd year. Yield.	Expenditure.	Income.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 Rubber	400	..	2399.32	..	..	7,150.00	..
2 Silk cotton	25	..	39.75	..	..	..	..
3 Coconut	20	..	490.00	..	..	275.00	—
4 Jack fruit (edible) ..	10	..	181.00	..	..	100.00	—
5 Pepper Vine ..	50	..	116.30	..	..	50.00	—
6 Albizzia .. —	25	..	27.50	..	..	6.25	—
7 Pine apple	50	..	42.50	..	50 Nos.	22.50	50.00
8 Clove	20	..	711.40	..	..	375.00	—
9 Tapioca	1 ha.	1000 kg.	150.00	500	1,000	150.00	500.00
10 Plaintain	1 ha.	40 palantation	40.00	200	plantation	...	200.00

Serial number and Species.	3rd year. Yield.	Expenditure.	Income	4th year. Yield.	Expenditure.	Income.	5th year. Yield.	Expenditure.	Income
(1)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1 Rubber	..	2,450	..	..	1,549.40	..	..	1,459.40	..
2 Silk Cotton	..	..	..	—	..	..	..	—	..
3 Coconut (edible)	..	275	..	..	275.00	..	..	..	..
4 Jack fruit — ..	..	100	..	..	100.00	—	..	100.00	..
5 Pepper vine ..	..	50	..	..	50.00	..	50Kg.	50.00	1,000
6 Albizzia	..	6.25	..	..	6.25	..	..	6.25	..
7 Pine apple	..	22.50	50	75	22.50	75	..	22.50	75
8 Clove	..	375	..	—	375	..	..	275	..
9 Tapioca	100	150	450	800 kg.	150	400	No Tapioca.		
10 Plaintain	40 plantation	—	200	40 plantation	..	150	..	No plantation.	

Serial number and Species.	6th Year.			7th Year.		
	Yield.	*Expenditure.*	*Income.*	*Yield.*	*Expenditure.*	*Income.*
(1)	(18)	(19)	(20)	(21)	(22)	(23)
1 Rubber	..	1549.40	..	..	1,549.40	..
2 Silk cotton	12,500	312.50	1,662.50	12.500	312,50	1,562.50
3 Coconut	..	..	..	..	..	100 Nos.
4 Jack fruit (edible) ..	..	100.00	..	50 Nos.	..	400.00
5 Pepper vine ..	50 Kgs.	50.00	1,000.00	100 Kgs.	50.50	2,000.00
6 Albizzia	—	6.25	..	..	6.25	..
7 Pine apple	75 Nos.	22.50	75.00	1000 Nos.	22.50	100.00
8 Clove	..	375.00	..	6.00 Kg.	387.00	840.00
9 Tapioca	..	..	..	..	..	..
10 Planitain	..	..	..	..	..	..

Serial number and Species.	8th year.			9th year.		
	Yield.	*Expenditure.*	*Income.*	*Yield.*	*Expenditure.*	*Income.*
(1)	(24)	(25)	(26)	(27)	(28)	(29)
1 Rubber	100 kg.	1,549.40	1,400.00	200 kg.	1,549.40	2,800.00
2 Silk cotton	12500	312.50	1,562.50	17,500	437.50	2,187.50
3 Coconut	100 Nos.	60.00	200.00	400 Nos.	60.00	600.00
4 Jack fruit (edible) ..	50 Nos.	..	400.00	50 Nos.	..	400.00
5 Pepper vine ..	100 Kg.	50.00	2,000.00	150 Kg.	50.00	3,000.00
6 Albizzia	..	6.25	..	..	..	..
7 Pine apple	100 Nos.	22.50	100.00	100 Nos.	22.50	100.00
8 Clove	100 Kg.	299.00	1,680.00	15 Kg.	405.00	2,100.00
9 Tapioca	..	..	..	..	..	..
10 Plaintain	..	—	—	—	—	—

ANNUAL INCOME AND EXPENDITURE STATEMENT.

Serial number and Species.	10th year.			11th Year.		
	Yield.	*Expenditure.*	*Income.*	*Yield.*	*Expenditure.*	*Income.*
(1)	(30)	(31)	(32)	(33)	(34)	(35)
1 Rubber	400 kg.	1,549.40	5,600.00	700 kg.	1,549.40	10,800.00
2 Silk cotton	25,000	625.00	3,125.00	25,000	625.00	3,125.00
3 Coconut	1,000	120.00	1,500.00	20,00	120.00	3,000.00
4 Jack fruit (edible) ..	100 Nos.	..	800.00	100 Nos.	..	800.00
5 Pepper vine ..	150 Kg.	50.00	3,000.00	150 Kg.	50.00	3,000.00
6 Albizzia	25 trees	...	13,750.00	—	27.50	100.00
7 Pine apple	100 Nos.	22.50	100.00	100 Nos.	22.80	100.00
8 Clove	20 kg.	415.00	2,800.00	40 kg.	455.00	5,600.00
9 Tapioca	..	..				
10 Plaintain	..	..				

	12th year.			13th year.		
	Yield.	*Expenditure.*	*Income.*	*Yield.*	*Expenditure.*	*Income.*
	(36)	(37)	(38)	(39)	(40)	(41)
1 Rubber ..	700 kg.	1,549.40	10,500	700 kg.	1,549.40	10,800
2 Silk cotton	25,000	625.00	3,125	25,000	625.00	3,125
3 Coconut	2,000	150.00	3,000	2.000	150.00	3,000
4 Jack fruit (edible) ..	100	—	800	100 Nos.	—	800
5 Pepper vine ..	150 kg.	50.00	3,000	150 kg.	50.00	3,000
6 Albizzia ..	..	6.25	...	..	6.25	...
7 Pineapple ..	100 Nos.	22.50	100	100 Nos.	22.50	100
8 Clove	20 kg.	415.00	2,800	20 kg.	415.00	2,800
9 Tapioca	...	—	—	..	—	—
10 Plaintain	—	—	—	—	—	—

Serial number and Species.	14th year. Yield.	Expenditure.	Income.	15th year. Yield.	Expenditure.	Income.
(1)	(43)	(44)	(45)	(46)	(47)	(48)
1 Rubber	1,300 kg.	1,549.40	18,200	1,300 kg.	1,549.40	18,200
2 Silk cotton ..	25,000	625.00	3,125	25,000	625.00	3,125
3 Coconut	2,000	150.00	3,000	2,000	150.00	3,000
4 Jack fruit (edibile) ..	100 Nos.	..	800	150 Nos.	–	1,200
5 Pepper vine ..	150 Kg.	50 Kg.	3,000	150 Kg.	50.00	3,000
6 Albizzia	..	6.25	..	..	6.25	..
7 Pine apple ..	100 Nos.	22.50	100	100 Nos.	22.50	100.00
8 Clove	20 Kg.	415.00	2,800.00	40 Kg.	455.00	5,600.00

Serial number and species.	16th year. Yield.	Expenditure.	Income.	17th year. Yield.	Expenditure.	Income.
(1)	(49)	(50)	(51)	(52)	(53)	(54)
1 Rubber	1,300 Kg.	1,549.40	18,200.00	1,300 Kg.	1,549.40	18,200.00
2 Silk cotton ..	25,000	625.00	3,125.00	25,000	625.00	3,125.00
3 Coconut	2,000 Nos.	150.00	3,000.00	2,000 Nos.	150.00	3,000.00
4 Jack fruit (edible) ..	150 Nos.	..	1,200.00	150 Nos.	..	1,200.00
5 Pepper vine ..	300 Kg.	50.00	6,000.00	300 Kg.	50.00	6,000.00
6 Albizzia	..	6.25	..	..	6.25	..
7 Pine apple ..	100 Nos.	22.50	100.00	100 Nos.	22.50	100.00
8 Clove	40 Kg.	455.00	5,600.00	40 Kg.	455.00	5,600.00

Serial number and Species.	18th year.			19th year.		
	Yield.	Expenditure.	Income.	Yield.	Expenditure.	Income.
(1)	(55)	(56)	(57)	(58)	(59)	(60)
1 Rubber	1,300 Kg.	1,549.40	18,200.00	1,300 Kg.	1,549.40	18,200.00
2 Silk cotton ..	25,000	625.00	3,125.00	25,000	625.00	3.125.00
3 Coconut	2,000	150.00	3,000.00	2,000 Nos.	150.00	3,000.00
4 Jack fruit (edible) ..	150 Nos.	..	1,200.00	150 Nos.	..	1,200.00
5 Pepper vine ..	300 Kg.	50.00	5,000.00	300 Kg.	50.00	6,000.00
6 Albizzia	..	6.25	..	..	..	..
7 Pine apple ..	100 Nos.	22.50	100.00	100 Nos.	2250	100.00
8 Clove	40 Kg.	455.00	5,600.00	40 Kg.	455.00	5,600.00

Serial number and Species.	20th year.		
	Yield.	Expenditure.	Income.
(1)	(61)	(62)	(63)
1 Rubber	1,300 Kg.	1,549.40	18,200.00
2 Silk Cotton ..	25,000	625.00	3,125.00
3 Coconut	2,000 Nos.	150.00	2,000.00
4 Jack fruit (edible) ..	200 Nos.	..	1,600.00
5 Pepper vine ..	300 Kg.	50.00	6,000.00
6 Albizzia	25 M3 6.25 M.T. fuel,	..	13,750.00
7 Pine apple ..	100 Nos.	22.50	100.00
8 Clove	40 Kg.	455.00	5,600.00

RAISING RUBBER NURSERY—400 PLANTS.

Serial number. (1)	*Quantity.* (2)	*Description of work.* (3)	*F.S.R. item number.* (4)	*Rate.* (5)	*Per.* (6)	*Amount.* (7)
1	05 hectare	.. Clearing the jungle growth	1	205.00	ha.	10.40
2	400 bag.	.. Collection of top soil 75 gms. ..	15	65.50	100	25.25
3	29.95 Kg.	.. Cost of rock phosphate	CF's No. 4672/82D.	750.00	MT.	22.00
4	400	.. Cost of 65 x 35 x 500 polythene bags ..	Do.	1.50	bag	600.60
5	1 ..	.. Framing trenches 100 Mts.	16	330.00	Trench	33.00
6	1 bed	.. Stacking the following bags	17	17.00	Do.	77.00
7	400	.. Putting the budded plants and preparing the stumps.	18	12.50	100	50.00
8	400	.. Planting the stump in polythene bags ..	19	6.25	100	25.00
9	1 bed	.. Forming germination bud	4	8.75	..	8.75
10	1 bed	.. Clearing the site	5	4.40	..	4.40
11	880	.. Fresh	61	4.40	1,000	3.87
12	880	.. Sorting	6 (a)	1.85	..	1.82
13	880	.. Sowing seeds	6	3.75	..	3.30
14	400	.. Picking out to poly bags	8	12.50	1,000	5.00
15	1 bed	.. Watering the bed	12	5.50	..	165.00
16	243 days	.. Watering the male mazdoor	..	12.00	per day	927.00
17	400	.. Cost of ploy ships	..	0.05	each	20.00
18	400	.. Collection of bud wood	..	3.50	100	140.00
19	400	.. Budding charges	..	3.50	100	140.00
20	400	.. Prouning 4 times	20	7.50	100	30.00
21	1	.. Spraying pesticides	21	20.00	..	20.00
22	0.13 Kg.	.. Cost of metalic sulphur L.S.	L.S.	20.00	Kg.	5.20
23	2.5 Kg.	.. Cost of sulphur	L.S.	6.00	Kg.	15.00
24	0.08 Kg.	.. Cost of copper sulphate	..	25.00	Kg.	2.00
25	450 x 300 — 30 gms.	Mannuring NPIC 8 times proportionately	22	250.00	1,000	80.00
26	400 plants 0.188 Kg.	Cost of fertiliser	..	2,500.00	M.T.	0.47
27	..	Shade pandal	L.S.	..	..	438.00
						2,939.32
		IInd year maintenance such as watering, etc.				450.00
						33,89.32

Planting 400 Nos. 6,700.

ANNEXURE III.

RAISING RUBBER FIRST YEAR—ESTIMATE FOR PLANTING RUBBER OVER AN AREA OF 1.00 HECTARE.

Serial number. (1)	*Quantity.* (2)	*Description of work.* (3)	*F.S.R. item number.* (4)	*Rate.* (5)	*Per.* (6)	*Amount.* (7)
1	1.00 ha. ..	Clearing heaping and burning jungle growth.	1	205.00	Ha.	205.00
2	100 M3 ..	Forming of 1.5 mt. wide with terrace along with contour about 5 .6 mt. apart with 90 cm. solid cutting and and giving an onward slope.	33	25.00	M3	2,500.00
3	45 Nos. ..	Collection of hardwood stacks ..	31 (1a)	13.76	1000	6.18
4	450 Nos. ..	Aligning and stacking	32 C	21.00	Hectrae	21.00
5	450 Nos. ..	Digging 105 x 96 x 75 cms. bits in all class of soil.	34	2.25	pit	1,012.50
6	450 Nos. ..	Refilling bits 105 x 95 x 75 bits with excavated top soil.	35	0.75	Pits	315.00
7	1.00 ha. ..	Application of rock phosphate before planting applying 175 gms. of musserie rock biosphare with the surface 20-25 of the soil of the refilled pits and mixing well rock phospate.	44	8.15	ha.	8.15
8	78.75 or 80 Kg.	Cost of rock phosphate	Local rate	660.00	tonne	52.80
9	450 Kgs. ..	Unloading the container from the vehicle transporting to the planting site and planting during June-July.	39 C	100.00	tonne	52.80
10	450 Nos. ..	Providing support to young plants by fixing bamboo or wooden post 1" cia and lying with suite twine including cost of twine.	48	50.00	100 Nos.	225.00
11	450 Nos. ..	Providing shade to younger plants with cadjan leaves and fixing with 2 stocks including cost of shading material.	49	81.00	100 pits	364 00
12	1 ha.	Mulching around replanting 1 mt. width including material transported.	42	41.25	ha.	41.25
13	450 Nos. ..	White washing during summer including cost of lime.	5 ha.	25.00	100 plants	112.50
14	4 kg.	Cost of cover crop seeds	Local rate	20.00	kg.	80.00
15	1 ha.	Pruning stock shorts in the year of planting.	46	28.00	ha.	28.00
16	1 ha.	Reclearing knife weeding to ground of the cover and pick axing the soil in two to four lines in between two rows of bits and sowing cover crops seeds.	38	238.00	ha.	238.00
17	.. ..	Application of rockphosphate at cover crop by broadcasting at a rate of 150 150 kg. per ha. in two split does to the first one month after showing and the second 2 months after first application.	45	6.25	ha.	6.25

18	150 kg. ..	Cost of rock phosphate	Local rate	660.00	MT.	99.00
19	1 ha.	Weeding during August—September ..	41(*a*)(ii)	315.00	ha.	315.00
20	1 ha.	Weeding during December—January ..	41(*a*)(iii)	463.00	ha.	463.00
21	100 kg. ..	Cost of manure NPK Kg. 10:10:14:15	Local rate	1,261	MT.	126.40
						6,669.53 OR 6,700.00

SECOND YEAR MAINTENANCE—ESTIMATE FOR MAINTENANCE RUBBER OVER AN AREA OF 1.00 ha.

Serial number.	*Quantity.*	*Description of work.*	*F.S.R. item number.*	*Rate.*	*Per.*	*Amount.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	45 ..	Reopening of pits 105 x 96 x 75 pits with excavated top soil.	35	0.70	Pit	31.50
2	1 ha.	Application of rock phosphate before planting applying 175 gms. of sussoria rock phosphate with the surface 2C-25 cm. of the soil of the re-filled pits and mixing with excluding cost of rock phosphate.	44	8.15	ha.	8.15
3	78.75 or 80 per cent.	Cost of rock phosphate	Local rate	660.00	MT.	52.80
4	450 Nos ..	Loading the container plants from the vehicle transporting of the planting site and planting during June—July.	30 C	100.00	100 No.	450.00
5	450 Nos. ..	Providing support to young plants by fixing bamboos or wooden posts 1' dia. tying with Jute twins including cost of twins.	48	50.00	100 Nos.	235.00
6	450 Nos. ..	Providing shade to younger plants with woven cadjan leaves and fixing it with 2 stacks including cost of shading materials.	49	31.00	100 plants	139.50
7	1 ha.	Mulching around the plant 1 mt. width including materials transported.	42	41.25	ha.	41.25
8	450 Nos. ..	White washing during summer including cost of lime.	51 *a*	25.00	100 Nos.	112.50
9	1 ha.	Pruning stock shorts in the year of planting.	46	23.00	ha.	23.00
10	4 kg.	Cost of cover crop seeds	Local rate	20.00	kg.	50.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)
11	1 ha. ..	.. Aplication of rock phosphate to cover crop broadcasting at a rate of 160 kg. per ha. two split doses the first one months after sowing and the second 2 months after first application.	45	6.25	ha.	6.25
12	1 ha. ..	.. Reclearing knife weeding flash ground of the area and pick axing the soil in two or four times in between the rows of pits and sowing cover crop seeds.	38	238.00	ha.	238.00
13	150 kg.	.. Cost of rock phosphate	Local rate	660.00	MT.	99.00
14	1 ha. ..	.. Weeding during August—September ..	41(*a*)(i)	315.00	ha.	315.00
15	1 ha. ..	.. Weeding during December—January ..	41(*a*)(ii)	463.00	ha.	463.00
16	100 kg.	.. Cost of mannure 10:10:14:15 NPK-Reg.	Local rate	1,264.00	MT.	126.40
						2,460.00

RAISING CLOVES.

Serial number. (1)	*Quantity.* (2)	*Particulars.* (3)	*Rate.* (4)	*Per.* (5)	*Amount* (6)
1	20 ..	... Cost of cloves seedling 1st year old	6.00	each	120.00
2	20 ...	... Digging 90 cm. 3 pits	2.00	each	40.00
3	4 Cs. ..	.. Tank silt	25.00	each	100.00
4	20 Nos.	.. Refilling the pits	1.00	each	20.00
5	20 Nos.	.. Planting the seedlings	70.00	1,000	1.40
6	20 Nos.	.. Sowing and budding	250.00	1,000	5.00
		IInd time			5.00
		IIIrd time			5.00
7		Cost of pesticide	L.S.	..	25.00
8	6 Nos.	120 Propotying including cost of props	0.25	each	30.00
	90 days	..	0.25	each plant	360.00
					711.40

20 tree on time	IInd year to VI year need and saucering 3 times ..	5.00	each time	15.00
90 days 20 times	Watering in non-rainy days	0.20	each tree	360.00
	VII year Additional Collection charges on Rs. 2;- for.			375.00

RAISING PEPPER PANNIYOOR VARIETY.

Serial number. (1)	*Quantity.* (2)	*Particulars.* (3)	*Rate.* (4)	*Per.* (5)	*Amount.* (6)
1	50	Cost of pepper seedlings Panniyoor	2.00	each	100.00
2	50	Digging 30 cm. 3 pits	150.00	1,000	7.50
3	50	Planting by refitting the pits	75.00	1,000	3.25
		Cost of country twine and tying the crepers	L.S.		55.55
					116.70
	50 Nos. ..	For the IInd year onwards on (Rs. 11) for each creaper to trimming tying with country twins and etc., till 20th year.	1.00	each	50.00
		Pine apple Variety.			
	50 Nos. ..	Cost of pine apple sucker	0.25	each	12.50
	50 Nos. ..	Digging 15 cm. pits and planting	150.00	1,000	7.50
	50 Nos. ..	3 (Thrice weeding)	7.50	one feamle	22.50
					42.50
	3 times ..	IInd year to XXth year Annual weeding of the plants, thrice.	L.S.		22.50

RAISING JACK FRUIT YIELDING EDIBLE VARIETY.

Serial number. (1)	*Quantity.* (2)	*Particulars.* (3)	*Rate* (4)	*Per* (5)	*Amount* (6)
1	10	Cost of jack seedlings 1½ year including	5.00	Each	50.00
2	10 Nos.	Digging 105x96x75 pits	2.25	,,	22.50
3	10 Nos.	Refilling and planting	0.75	,,	7.00
4	40 days.	Watering the plant in non-rainy days once in a week ..	0.25	,,	100.00
		Contingencies	..	,,	1.00

		IInd year to VI 40 days watering charges	0.25	Each.	100.00
		VII year till XXth year			
		No expenditure. The fruits can be collected by the Ranger. No expenditure.			

Estimate for Raising Coconut:

1	20 Nos.	Cost of coconut seedling tax variety including loading and unloading.	5.00	Each.	100.00
2	5 cart load.	Cost of transport of tank silt and ash including cost of transport.	25.00	Each cart load.	125.00
3	20	Digging 105x95x75 cm. pits	2.25	Pit.	34.00
4	20	Refitting and planting including transport	1.00	Pit.	20.00
5	40 days.	Watering in non-rainy once in a week	0.25	Each plant.	200.00
					490.00

IInd year—

40 days.	Watering and green manuring	0.25	Each plant.	200.00

IIIrd year—

40 days.	Watering and ash manuring	0.25	Each plant.	200.00

IVth year—

40 days.	Watering and green manuring	0.25	Each plant.	200.00

Vth year to VIIth year—No expenditure.

VIIIth year—

	Climbering and collecting and trimming	3.00	Each plant.	60.00

IXth year—

	Climbing and collecting and trimming	3.00	Each plant.	60.00

Xth year—

20 Nos.	Collecting the use fructs	L.S.	Do.	120.00

XIth year—

20 Nos.	Collecting usufructs	L.S.		120.00

XIIth to XX year—

20 Nos.	Collecting usufructs	L.S.		[illegible]

RAISING SILK COTTON HYBRID (CEIBA).

Serial number.	Quantity.	Particulars.	Rate.	Per.	Amount.
(1)	(2)	(3)	(4)	(5)	(6)
1	25	Cost of silk cotton seedlings	1.00	Each.	25.00
2	25	30 cm. 3 pits digging	150.00	1,000	3.75
3	25	Transport and plucking	150.00	1,000	3.75
5	25	Weeding and soil working	110.00	1,000	2.75
5	25	Constructing semi circular bunds	180.00	1,000	4.50
					39.75

IInd year to Vth year—**No. penditure.**

VIth year to VIIIth year—

	1,2500	Collection charges	25.00	1,000 pods.	312.50

I *Xth year*—

	17,500	Collection charges	25.00	1,000	437.50

X to XX—

	25,000		25.00	1,000	625.00

RAISING ALBIZZIA—25 Nos.

Serial number.	Quantity.	Particulars of works.	Rate.	Per.	Amount.
1	25 Nos.	Cost of Albizzia seedlings	0.50	Each.	12.50
2	25 Nos.	Digging 45 cms. pits	260	1,000	6.50
3	25 Nos.	Planting by refilling the pits	90	100	2.25
4	25 Nos.	Soil working and fencing semi circular bunds with 22 cm. mid height.	250	1,000	6.25
					27.50

IInd year to VIII—

Soil working alone .. .. 6.25 per year.

CHAPTER IX.

MISCELLANEOUS REGULATION.

Section 1 Minor Forest Produce.

429. *General Constitution.* :—This will cover all the reserves and unreserves of the division.

430. *Analysis and valuation of the crop.*—The important items of Minor Forest Produce occurring the the Division are :—

English or Tamil name.	*Botanical name of species.*	*Portions used.*
(1)	(2)	(3)
Athika i	Ficus species	Fruits.
Avarm Bark	Cassia auriculata	Bark.
Black dammer of Karunkungiliam	Canarium strictum	Gum.
Cardamom	Elettaria caramomum	Fruits.
Clearing Nut or Thethankottai	Strychnos potatorum	Seeds.
Curry leaves	Murraya koenigil	Leaves
Cut stone	....	....
Deer horns	....	....
Eacham grass	Phoenix acaulis	Leaves.
Eiya kundu	Bouwolifa serpentina	Roots.
Elandai	Sizyphus mauritiana	Fruits.
Fodder grass	Several species	Entire plant.
Gallnut	Terminalia Chebula	Fruits.
Gravel	....	....
Ginger	Gingerber officinalis	Steam tuber.
Gun kino	Pterocarpus marsupium	Gum.
Honey	....	....
Illuppai	Bassia latifolia	....
Indukodi	Acacia intsia	Bark.
Undunar	Acacia intsia	Fibre.
Ivory	....	.. ..
Kalli	Euphorbia antiquorum	Stem.
Kattu-mandarai	Bauhinia vahlli	Leaves.
Kana-kamugu	Pinanga dickaoni	Fruits and Leaves.
Kattu elimichai	Atlantis monophylla	Fruits.
Kattu elimichai	Limonia acidissima	Fruits.
Kattjirankottai	Strychnos nux-vomica	Fruits.
Kaniu jathikai	Knema attenuata	Fruits.

(1)	(2)	(3)
Kilakkai	Carrisa carandas	Fruits.
Konnai Bark	Cassia fistula	Bark.
Koondappanai	Caryota urens	Flowers.
Kundumani	Abrus precatorius	Seeds.
Koovai	Curcuma angustifolia	Leaves.
Korai grass	Cyperus rotundus	Stem
Lavangam	Chinnamomum Zeylanicum	Fibre.:
Mohwa	Madhuca indica	Flowers and seeds.
Nannariver	Hemideamus indicus	Roots.
Neem seeds	Azadirachta indica	Seeds.
Nellikai	Emblica officinalis	Fruits.
Nu-vomica	Strychnos nu-vomica	Seeds.
Odankodi	Hippocratea indica	Stem.
Peyypodal	Trichosanthes cucumorina	Fruits.
Plantain leaves	Musa species	Leaves.
Pungam seeds	Pongamia pinnata	Seeds.
Punnamkottai	Calophylluminophyllum	Seeds.
Rattan	....	....
Sambhur horns	....	....
Soap nut	Sapindus emerginatus	Fruits.
Shekoy	Acacia conchinna	Fruits.
Stone	....	....
Sundaikai	Soluanm pubscens or trilobatum ..	Fruits.
Tamarind	Tamarindus indica	Fruits.
Thulukai	Sntada Phsaeoloides	Seeds.
Teenaika or Beleric	Terminalia bellerica :	Fruits. ....
Myrobolam	....	
Turmeric	Curcuma longa	Stem tuber.
Valampuri	Helicteres isora	Bark.
Vallikilangu	Ipomica digitata	Tuber.
Vembadam	Ventilago madraspatana	Bark.
White dammor or Vellahkkungilium	Vatroira indica	Gum.
Wild brinjal	Solanum nigrans Solanum pubescens	Fruits.

(1)	(2)	(3)
Wild jack	Artocarpus heterophyllus	Fruits.
Wild Mangoes	Mangifera indica	Fruits
Wild Pepper	Piper longum	Fruits.
Wood apple	Feronia limonia	Fruits

Division of the area :

431. The lease units are recast as follows taking into consideration the availability of the produce, viability of the unit and administrative convenience.

Lease unit. (1)	*Locality.* (2)
Alagiapandipuram Range :	
1 Minor Forest Produce excluding Reed, Rattan and Manure leaves.	Whole of Alagiapandipuram Range.
2 Rattan .. Farm I	Whole of Alagiapandipuram Range.
3 Tea leave:	S. No. 3060 Ponmani.
4 All Minor Forest Produce excluding Reeds, Rattan and manure leaves.	Whole of Kulasekaram Range.
5 Rattan .. Farm II	Whole of Kulasekaram Range including Upper Kodayar.
Boothapandi Range :	
6 All Minor Forest produce excluding reeds, Rattan and manure leaves.	Whole of Boothapandi Range.
7 Rattan .. Farm III	Whole of Boothapandi Range

432. As per instructions issued in Cheief Conservat' Ref. No. T1/108371/83 dated 22nd December 1984 the working of Rattan Farm has been fixed in a cycle of 5 years rotation.

Tea leaves shall be sold in auction with a lease periods of two years starting from 1st April.

433. *Method of treatment* : *Agency of exploitation* : The right to collect Minor Forest Produce will be sold in auction each year. The lease period will be from 1st July to 30th June.

434. Ivory, deer horns and remains of deed animals will be collected departmentally in the interest of preservation of Wildlife and sold through the Forest Utilisation Officer, Madras.

435. Departmental collection sof any Minor Forest Produce may be resorted to, if considered necessary after obtaining specific permission of the Conservator of Forests.

436. Seeds have been leased to Tvl. Sun Paper Mill Limited, Cheranmahadevi and Sree Kumari Handicrafts Stores, Kanyakumari. The division is divided into 3 coupes and the working period for each coupe is Financial year.

437. For the sake of convenience in working the following coupes are formed in this Division.

Coupe No. I	Whole of Kulasekaram Range.
Coupe No. II	Whole of Boothapandi Range.
Coupe No. III	Whole of Alagiapandipuram Range.

438. The rights of Kanis admitted by the rules formed under erst while Travancore Cochin State Government will be respected in Kanyakumari Division.

439. *Accounts* : The Contractor will give a full accountsof all Minor Forest Produce removed in detail to the Ranger every month.

440. *Control* : A control book, control journal will be maintained.

Section (*a*) General constitution and charactor of population :

441. This includes all the forests occuring in the division in as much as these forests are fairly rice in wildlife.

442. Elephant, Sambhar, Gaur, Wild boar, Nilgiri Thar, Bear, Porcupines and lion tailed macaque are some of the important species of animals. The division has got a good population of elephants. In Maruthamparai the herdssof elephants can be sighted any time.

443. Among carnivores Panther and Jungle cat are found in the division. Besides a lot of avifauna is also present.

A detailed description of animals and avifaunashave been given in Chapter II of Part I.

Section (*b*)—Division of the area :

444. *Area* : This is an overlapping working circle and covers the entire division.

Section (*c*)—Analysis and valuation :

445. *Population* : No census has over been carried out in the Division. Based on the information garhered in respect of size and number ofsherds an estimation is made.

446. *Elephants* : A population of 50 to 60 elephants are estimated in the division. They are frequently met in Maruthamparai, Upper Kodayar and around Balamore estate. Most of the elephants keep on crossing the division boundary from adjoining Kalakad sanctuary.

447. *Sambhar* : The approximate population of sambhars in the division will be around 300. They are found scattered in the whole Division.

448. *Gaur* : In Upper Kodayar there will be about 15 gaurs.

449. *Bear* : Bears have been sighted in Upper Kodayar and around Balamore estate. The total number will be around 3 to 4 only.

450. *Panther* : The population of panther has increased. As a result the total population of panther may be 15 to 20.

451. *Tiger* : A Tiger is said to be spotted by some trakkers abovesBalamore estate in Mahendragiri Reserve Forest.

452. *Wild Dog* : The total population of Wild dogs in this Division will be about 30.

453. *Nilgiri Thar* : Nilgiri Thar can be seen in Upper Kodayar.Nilgiri Thars can be seen, while climbing up by winch maintained by Electricity Board. The total population of Nilgiri Thar may be 15 to 20.

454. *Lion tailed Macaque* : It is difficult to find the total number of Lion tailed Macaques in Kanyakumari Division. They come in Kanyakumari Division from adjoining Kalakad Sanctuary.

Section (*d*)—Method of Treatment :

455. *System of Management* : Conservation for nature's selection system wll be followed.

Section (*e*)—Regulation of Conservation Operation :

456. *Demarcation* : Habitat of important animal's like elephants, dear, Sambhar, bear, gaur, monkey have been demarcated on management map. Migration path in respect of elephants have also been shown.

457. *Habitat improvement work* :. . Least disturbance and availability of adequate drinking water are the prise requirements of all the animals.

458. *Providing salt licks at suitable points* : In Muthukaduvayal and Upper Kodayar at suitable points salt licns should be provided

459. *Construction of percolation ponds* : In Muthukaduvayal Asambu Reserve Forest and Mahendragiri Reserve Forest many percolation ponds should be constructed at the rate of two percolation ponds each year.

460. *Protection* : Wildlife Protection Act should be implemented effectively. Cases of poaching should invariably be prosecuted and pursured and conviction fetained.

461. *Cattle* : All the cattle which are permitted to enter inro the Forest shall be inoculated. In the interest of Wildlife it is essential rhat the entry of unproductive cattle is curtailed in a phased manner.

Section (*f*)—Regulation of yield :

462. Horns, rusks and other valuable animal partsson the ground will be collected

463. *Statistical* : The following statistics would be collected :

(1) The effect of the V.C.C. Liquid Propulsion Experimental Stations on wild animals.

464. *Death of Wildlife* : Cause of death on the basis of postmortem done by Forest Veterinary Officer shall be reported in detail.

465. *Offence relating to wildlife* : All details of habitual offenders should be maintained in Range Office as well as District Forest Office.

466. *Wild life Census* : Wildlife Census should be carried out at regular intervals.

457. *Wildlife Association* : A Wildlife's Association is functioning at Palayamcottai. A similar Association can be formed at Kanyakumari District also. This Association will be useful in bringing awareness among the public and also rendering assistance to the Department by giving information on poaching and rewarding subordinate and informers. The local youth clubs and conservationists should be involved in the Association.

468. *Section-2-Fire protection.*—During the summer months fire becomes common feature and causes considerable damage to the forests. In the natural forests the outerslopes upto an elevation of 350 metres are the worst affected because of topography and grazing incidence. Majority of fires are usually caused by graziers. Nothing can be moreeffective than intensive patrolling of vulnerable localities during fire season and heavy penalty on these who indulge in such vandalism. Keeping in view the vast area the following measures are suggested.

(*a*) *Fire tracing* :—External the (boundaries of the division and range) and internal (Plantation, RF boundaries in the division) fire lines shall be cleared.

(*b*) *State boundaries.*—Fire tracing will be done annually along the common boundary between Kerala and Tamil Nadu. A permanent guidance in the form of an inspection path 3 m wide will be formed at an approximate distance of 1 chain from the common frontier. All inflamable growth on this path including grass should be uprooted. Every year in January this guideline will be roughly relceared and at the earliest possible date that is, as soon as the grass between the line and frontier is dry enough, it will be burnt.

(*c*) *Roads and Paths.*—Fire tracing should be done along roads and paths passing through deciducus forests or grass lands.

(*d*) *Plantations and timber depot.*—The fire line around the plantations and timber depot should be cleared in time and fire tracing done before the fire season begins. This should be enforced by frequent inspections by the Range and District Forest Officer.

(*e*) *Appointment of Fire Watchers.*—Fire watchers will be appointed during the fire season. These fire watchers will perambulate vulnerable areas and assist the beat subordinates in exitinguishing the fires. The Forest staff should see that these watchers are actively engaged and are constantly on the move in the areas allotted to them. The District Forest Officer will decide the number of fire watchers depending upon the seriousness of the fire season. As far as possible only local kanies should be employed as fire watchers.

(*f*) *Fire figthting.*—As soon as any fire is noticed, the local Forest staff will collect all the available villagers and hill tribes and proceed to the spot and extinguish the fire by beating it out with branches or throwing earth on it or by counter firing. A fire occurrence report will be submitted in accordance with standing orders. An investigation into the cause should be made and the culprit detected and prosecuted.

(*g*) *Indirect measure.*—Areas burnt by graziers may be closed to grazing for three years so that advantage of burning are lost to the graziers. Provision of punitive measure as contemplated in forest manual should be invoked for this.

(*h*) *Control :—Fire control journal.*—Details of fire protection measures, areas closed for grazing due to fire and fire incidence in each range may be noted in a bound Note Book. District Forest Officer's comments on adequacy or in adequacy of measures and improvement thereon may be recorded therein.

(*i*) *Fire maps.*—Fire map on 1"1 mile scale shall be maintained in each range. Every case of fire will be marked on the map and serial number given in Chronological order with date of occurrence of fire. Different colour shall be used for different years. One set of maps may be used for five years.

Section 3—Boundaries.

469. The work of survey and demarcation and providing pillars with cement concrete along the boundaries of the enclosures and pheriperies of R.F.'s are being carried out from 1978-79. Two Rangers and two Foresters have been appointed specifically for this purpose. Till now 5,743 stones have been planted. The break up details are given below :—

Particulars of Survey and demarcation in Kanyakumari Divisions :

Details of Stones Planted.		*Details of Stones planted RF's wise.*	
Year.	*Number of Stones.*		
1978-79	145	Veerapuli RF	2,399
1979-80	249	Kilamalai R.F.	365
1980-81	1,027	Mahandragiri R.F.	707
1981-82	1,369	Thadagamalai R. F.	123
1982-83	486	Velimalai R. F.	654
1983-84	431	Poigaimalai R. F.	125
1984-85	606	Therkumalai R. F.	800
1985-86	648	Pechiparai grazing Block	38
1986-87	762	Asambu R. F.	532
	5,743		5,743

These Plantation stones should be maintained every year and the balance work should be completed immediately.

Inter State Boundary.—It was agreed during the joint discussions regarding the Inter State Boundary between Kerala and Tamil Nadu held at Kannanur, on 15th and 16th March, 1985 that the clearance of the Boundary passing through the Kilamalai R.F. should commence from 6th April 1985. For this purpose, survey staff of 2 surveyors from each state have to be deputed. The total length of Inter State Boundary is 9 Km. The District Forest Officer should maintain these planted stones.

Section 4—Buildings and Wells

A list of buildings in the division is given in Appendix VI. All the buildings both old and new shall be kept in a state of good repair. During the last plan period the following buildings were constructed.

(1) Junior Assistant quarters at Kulasekaram.

(2) Forester's quarters at Kaliyal.

(3) Forest-Guards quarters at Pechiparai (Zero point).

(4) Foresters and Watchers quarters at Pechiparai.

(5) District Forest Officer's quarters at Vadaseri depot (Nagercoil).

471. During the last plan, it was proposed to renovate the old Range Officer quarters at Kulasekaram, Alagiapandipuram and Vadaseri, but the work was not carried out. During this plan period all the old buildings in this Division shall be maintained and where necessary special repair renovation undertaken.

During this plan period the following buildings are recommended for construction.

Year.	Building to be constructed.
(1)	(2)
1988-89 ..	.. (1) Arukkani Check Post and three Forest-Guard quarters at Arukkani.
	(2) Kalial Forest-Guard and Watcher quarters at Kalial.
1989-90 ..	.. (1) Kulasekaram Forest-Guard and Watcher quarters at Kulasekaram.
	(2) Surulode Forest-Guard and Watcher quarters at Ponmanai.
1990-91 ..	.. (1) Balamore Forest-Guard and Watcher quarters at Keeriparai.
	(2) Boothapandi Range Officer's quarters at Boothapandi.
	(3) Check Post at Macode and Aramboly.
1991-92 ..	.. (1) Pannangudi Forest-Guard and Watcher quarters at Pannangudi.
	(2) Check Post Building at Pechiparai.
1992-93 ..	.. (1) Forest-Guard and Watcher quarters at Arulmozhi.
	(2) Check Post at Kaliakharadu.
1993-94 ..	.. (1) Assambu Forest-Guard and Watcher quarters at Alagiapandipuram.
	(2) Check Post at Kulasekaram.
1994-95 ..	.. (1) Thadagai Forest-Guard and Watcher quarters.
	(2) Residence of Assistant Conservator of Forests, Forest Protection Squad at Nagercoil.
1995-96 ..	.. (1) District Forest Officer's Driver quarters at Vadaseri.
	(2) Ranger, Forest Protection Squad quarters at Nagercoil.

472. Apart from this the Range Officers Residence and Office at Alagiapandipuram and Kulasekaram are in bad shape. These buildings should be given special repairs. There is an old Rest House at Balamore under the control of Public Works Department. This Rest House may be quite useful for the Forest Department. The District Forest Officer should take action to take over the Rest House from the Public Works Department.

473. *Wells.*—The list of existing wells have been given in Appendix VII. All the existing wells will be maintained in a good state so that the water from them can be used at all times. During the last plan period, construction of new well was proposed at Thadikarankonam for the water supply of subordinates quarters, but it has not been constructed. At least during this plan period this well should be constructed.

Section 5

474. *Roads.*—A list of roads maintained in this division has been given in the Appendix VII. No new road was constructed during the plan period. The existing roads have not been maintained properly and hence it is proposed that without fail the manual maintenance should be carried out. No new road is proposed during this plan period.

Section 6

475. *Raingauges.*—No rain gauges have been maintained in this division. It is essential to install rainguages in different rainfall zones of the division. The information therein collected will be a guiding factor for prescribing planting operations suited to the localities.

The maintenance and protection of rainguages should be entrusted to the nearest executive staff. Monthly reports should be got from them and entered in a register in the District Forest Office.

Section 7 :

476. *Check-Post.*—At present there ware 8 check posts in rhe following places.

(1) Kulasekaram
(2) Kalial
(3) Pechiparai.
(4) Arukkani.
(5) Macode.
(6) Kaliakharadu.
(7) Thadikarankonam.
(8) Aramboly.

477. In the last plan also it was mentioned that these check post buildings should be made permanent buildings. But no follow up section was taken up. However during this plan period these temporary check posts should be converted into permanent buildings.

Section 8 :

Electricity Board :—(Kodayar Hydro Electric Project.)

478. For establishing Kodayar Hydro Electric Project in Kanyakumari District 232 acres of Forest Land in Kodayar Lower camp (Veerapuli and Klamalai R.F.) and 178.9 acres of Forest land in Kodayar Upper camp (Veerapuli R.F.) were-leased out to the Tamil Nadu Electricity Board during 1963. Outof this the Tamil Nadu Electricity Board requires 54.0624 acres of land in Upper Kodayar and 79.184 acres of land in Lower Kodayar permamently for the project. So far they have remitted Rs. 4,03,795.20 towards lease rent at a rate of Rs. 60 per acres per annum.

479. In G. O. Ms. Mo. 1040 F&F Dept., dated 30th September 1986 communicated in the Chief Conservator's Lr. No. 04;69457/77-47 dated 6th November 1986 it has been ordered thatno lease rent should be collected from Tamil Nadu Electrcity Board for all Hydro Elec ric Projects beyond 5 years and only land cost should be collected from the Tamil Nadu Electricity Board for the areas permanently required by them. They require 133.2464 acres of land Action should be taken to send proposals to Government for permanent transfer of 133.2464 acres to Tamil Nadu Electricity Board. The balance area not needed by the Electrcity Board should be got reverted back to the Department at the earliest possbible time.

Section 9 :

480. *Cardamom Leases* :—There are 15 cardomom lease units in Alagiapandipuram Ranges of this Division. The lease unit block No. VII was surreendered by Leesee Tmt. Elcy Jacob. The lease has been cancelled in conservator's Ref. No. 23152/84 D1, dated 29th May 1986. Subject to payments of arrears of Rs. 861.60, now the leassee has already paid the arrears and the lease is being maintained departmentally. 8 Kgs. of Cardmom has been collected during 1985.

481. In respect of blocks I to V of Ponmanai Village and I to IV of Balamore the kist amount due for the year 1986 due as on 1st October 1985 has not been paid. The leases have been cancelled.

482. In respect of the other 5 blocks, the lessees have paid the kist amount land case and educational cases up to the year 1986 due as on 1st October 1985.

After the lease time as per the Forest Conservation Act 1980 as per the copy for Govt. of India letters No.2-1/82 FRY' Ministery of Agricuture dated 5 May 1982 communicated in Chief Conservator's Entd. No. 454481/82-1, dated 19th May 1988. Use of forest area for growing commercial crop such a cardamom, attracts the Forest Conservation Act, 1980. Hence after the expiry of lease period, these cardamom blocks should be maintained by the department.

STATEMENT SHOWING THE CARDOMOM LEASE IN KANYAKUMARI FOREST DIVISION.

Serial number and Name of Lease.	Block No.	Extent in ha.	Period of Lease	Lease amount for the Year 1986 due on 1—10—1985.			
				Rent.	Land Cess.	Educational Cess.	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 Mrs. Geetha George	Muthukuzhi Block IV	15.38	11-5-1967 to 10-5-1992	1,923.00	230.76	365.37	2,520.00
2 M. C. George	Block V ..	17.81	11-5-1967 to 10-5-1992	2,226.25	267.15	423.00	2,917.00
3 Dr. Oby Jacob Charian	Block VI ..	12.55	11-5-1967 to 10-5-1992	1,569.00	188.30	298.15	2,096 .00
4 Thomas Vargheese	Block III ..	17.40	14-7-1967 to 13-7-1992	2,175.00	261.00	413.25	2,850.00
5 Mrs. Molly Varghese	Block VIII ..	13.35	15-5-1963 to 14-5-1992	1,668.75	200.30	317.15	2,187.00
6 Dr. Morris	Ponmanai Block II	8.90	15-5-1963 to 14-5-1988	1,112.50	133.60	211.50	1,458.00
7 Do.	Ponmanai Block I	10.52	15-5-1963 to 14-5-1988	1,315.00	157.80	249.85	1,723.00
8 Mrs. Rossammal Mathias ..	Ponmanai Block IV	3.24	15-5-1963 to 14-5-1988	405.00	48.60	77.00	531.00
9 Do.	Ponmanai Block III	13.35	15-5-1963 to 14-5-1988	1,668.75	200.30	317.15	2,187.00
10 Do.	Ponmanai Block V —	2.83	15-5-1963 to 14-5-1988	353.75	42.50	67.30	464.00
11 Dr. Morris	Balamore Block I	2.43	15-5-1963 to 14-5-1988	307.75	36.50	58.00	399.00
12 Do.	Balamore Block II ..	2.43	10-10-1963 to 9-11-1988	307.75	36.50	58.00	399.00
13 Do.	Balamore Block III ..	2.43	10-11-1973 to 9-11-1988	307.75	36.50	58.00	399.00
14 Do.	Balamore Block IV	2.43	10-11-1963 to 9-11-1988	307.75	36.50	58.00	399.00
	... ..	125.05					

Cardomom Block s forms 6 to 14 S. No. have been suspended due to the non payment of kist rent amount for the year 1986.

Section 10 : /

Cloves Divisions :

484. Clove (Eugenia caryephyllus) a high priced spice is in demand all over the world. Clove of commerce is the dried marured unopaned flower buds.

485. In Kanyakumari District, trial clove plantations were raised in Mahendragiri R.F. at an elevation of about 600 metres as follows :

1971	..2 hec.
1972	..2 hec.
1973	..2 hec.
1975	..2 hec.
Total	..8 hec.

486. These trials proceed hightly successful. Consequent to the successful establishment of the plantations, a clove divisions was formed as per G. O. Ms. No. 700/F & F dated 24rh July 1975 communicated in Chief Conservator's No. 7410/74 J2, dated 7th August 1985.

Clove plantations were raised at Maramalai in Veerapuli R.F. at an elevation ranging from 350 to 550M, to an extent of 102 ha. as furnished hereunder.

	Hectres.
1976	..31
1977	..36
1978	..35
Total	102

Therefore as of now, the division has raised 110 ha. of clove plantations.

The yield obtained and revenue realised so far is given **below :**

By Sale of clove and clove produce :

	1976	1977	1978	*Older*	*Revenue*
	Kgs.	Kgs.	Kgs.	Kgs.	Rs.
1980-81—					
Cloves	8.20	..	..	27.273	..
Stalk	5.00	..	..	9.005	..
Leaves	18.00	..	..	18.800	5,5685 5
1981-82—					
Clove..	44.52	..	..	11.110	..
Stalk	10.00	..	..	3.980	..
Leaves	65.00	..	..	28.00	31965.00
1982-83—					
Cloves	86.26	..	..	42.80	..
Stalk	19.50	..	..	14.62	..
Leaves	..	..	..	36.00	33,037.40
1983-84—					
Clove	60.05	20.31	63.00	43.00	..
Stalk	19.96	6.77	22.00	16.00	..
Leaves	20.0	5.00	30.00	60.00	31,631.55
1984-85—					
Cloves	135.60	11.20	92.640	..	..
Stalk	43.00	3.00	29.400	..	..
Leaves	300.00	400.00	250.00	500.00	34,135.10
1985-86—					
Clove Grade I ..	722.50	123.80	300.860	176.90	1324.05
Grade II	32.50	5.90	3.00	5.40	**46.50**

Section 11 :

487. *Liquid Test Facility Centre.*—As per the G.O. Ms. No. 1405/F and Ft Department, dated 2nd December 1981 communicated in the Chief Conservator's Ref. No. G2/93356/80-114, dated 5th December 1981 an extent of 2998 acres was placed under the control of the Central department of Space in the following Reserve forests .—

	acres.
Mahendragiri R.F.	2,802.00
Poigaimalai R.F.	196.00
	2,998.00

This area has been placed under the Department of Space under the following conditions :—

(1) The area of 2,998.00 acres of R.F. in Mahendragiri and Poigaimalai R.F.'s required for the core area will be placed under the control of the Department of Space retaining the legal status of R. F. for their use.

(ii) The Department of Space is permitted to raise necessary infrastructure installations required for their project, subject to ensuring that existing tree growth is protected properly.

(iii) The area of +2,0 01.50 acres of R. F.'s in the Mahendragiri R.F. and Poigaimalai R.F. (497.501,504.00) required for the Buffer or zone B will not be transferred to the Space Department but will remain exclusively with the State Forest Department as R.F.

(iv) The State Forest Department should not lease out of allot or transfer any areas in the Buffer zone to any other party or department.

II. The placement of R. F. as envisaged under item 1 above will be subject of the following conditions and safeguards :

(i) The Department of Space will have the full liberty to enforce necessary security measures.

(ii) The department of Space will make suitable arrangements to ensure that illicit folling of trees does not make place in the area under its control as as well as take up plantations of trees to plans suggested by the State Forest Department with a view to improve and augment existing tree cover in the area.

(iii) No building activity will be taken up in the ridge connecting Kalakad R. F. and Mahendragiri R.F. However a chain link would be provided by the Department of Space on the inter connecting ridge for the better protection of wild Fauna and flora in that area.

(iv) The Department or Space will caary out soil erosion control measures in the Forest area under its control as the State Forest Department may suggest from time to time.

(v) The Department of Space will make necessary allocations in favour of the State Forest Department for engaging the watch and ward staff required for the better protection of the wild fauna and flora in the area. The State Forest Department will ask for annual allocations and employ the staff as may be required, since the Department of Space would not like to enter into any continuous correspondence for the creation of post.

(vi) The Department of Space would ansure that the Central Industrial security force is equially responsible for taking effective action against poaching and illicit felling.

(vii) The Department of Space will erect at its expanse watch towers at strategic points indicated by the State Forest Department as part of the arranegements for the better protection of the wild fauna and flora of the area.

(viii) The State Forest Department will have the full right of inspection and advice on the matters relating to protection and conservation of the forest eco system in the area under the control of the Department of Space.

(ix) The State Forest Department will ensure that the safe quards mentioned above are properly observed and implemented and that special care is taken not to spoil the existing forests.

(x) Necessary safeguards and measures will be taken by the Department of Space to provent pollution of streams and atmosphere in consultation with the State Department of Environmental Hysience and abide by the pollution control measures laid down by that department.

(xi) The Forest Department will cancell all grazing permits used for cattle grazing in the CORE AREA.

(xii) Wherever tests are conducted in the CORE AREA, the Department of Space will give all advance notice of such tests to the concerned District Collectors, District Forest Officers, and Chief Conservator of Forests, Madras so as to enable them to clear the BUFFER ZONE of human populations and animals.

(xiii) The State Forest Department will extend all necessary guidance to the Department of Space in the planting of trees and such forsetry planting operations in the CORE AREA as well as BUFFER ZONES.

(xiv) The entire R.F. area in the CORE and the BUFFER zones will be surveyed and copies of maps with clear marks of the CORE ZONE and the BUFFER ZONE will be sent to the Chief Conservator of Forests, Madras, the District Collectore and the Government for record. Orders undertaking a detailed cadestral survey of the area will be issued separately by the Government in commercial taxes and Religious Endowment Department.

(xv) The State Forest Department will draw up a set of suitable guidelines for the preservation of Forest and fauna and flora in the a ea for the use of the Department of Space.

Section 12 :

488. *Arasu Rubber Corporation Limited.*—Two Rubber Circle (East and West) were formed over an extent of 5,765.70 ha. in Kanyakumari district under the control of Conservator of Forests. As per G.O. Ms. No. 197-F and F. department dated 25th February 1984 these plantations were brought under Arasu Rubber Corporation Limited under the control of a Managing Director at Nagercoil. The Conservationr of Forests at Thakkalai was designated as General Manager of the Corporation. In G.O. Ms. No. 703, F & F department dated 8th July 1986, sanction was accorded for creation of a post of chairman cum Managing Director who now head of the Corporation.

489. There are 9 Rubber Divisions in this Corporation and two Rubber factories one at Keeriparai and other one at Perunchani. The above two factories are producing rubber sheets and concentrated latex.

The total area of each division is as follows :—

Name of Division.	*Total area.*	*Area under tapping.*	*Young Plantation.*	*Empty areas to be transferred*
Keeriparai	489.80	401.90	87.90	.
Paraliar	463.50	398.10	65.40	..
Kalikesam	434.70	354.70	80.10	..
Manalodai	534.10	335.46	198.65	..
Chithar	647.90	361.00	186.90	100.00
Kuthiar	496.80	401.70	95.10	..
Kallar	595.90	225.75	167.15	200.00
Maruthamparai	429.50	249.40	112.70	67.40
Mylar	693.40	369.60	266.20	57.60
Total ..	4,785.70	3,100.61	1,260.09	425.00

Balance 980.7 ha. has not been planted by Rubber.

Section 13 :

490. *Control.*—The control records and maps which are to be maintained in the District Forest Office have been dealt with under the various working circles. Brief details of each of these records and the manner in which they should be maintained are given below :

491. *Control Book.*—This record will show all operations actually carried out in connection with the exploitation of forest produce done every year in each felling series as per the prescriptions of the working plan, as well as such exploitation as is neither prescribed nor suggested but is carried out. The yield of timber or other forest produce exploited and the revenue derived there from as against the forecast in the working plan will be also entered therein.

492. *Record of works.*—This is a brief record to be written up annually of all works carried out under the prescriptions or recommendations of the working plan as well as such measures as are neither prescribed nor suggested but are carried out.

493. *Register of deviations.*—This is a record showing every case of deviation from the prescriptions of the working plan, the need for the deviation and the authority by whom it was sanctioned. The Control books, Record of works and the Register of deviations will be maintained separately for each working circle and shall be written up annually.

494. *Control journals.*—The control journal will give a detailed account of the management of the division. The main object of the journal is to record observations on the spot and information not obtainable from prescribed forms. It will be in short, a running commentary on all objects of administration specially on the extent to which the objects of the working plan have been realised and the extent to which the methods prescribed have been found suitable. The journal is intended to give the District Forest Officer an opportunity for recording suggestions for modification and improvement in the method of working laid down in the working plan. The Control journal will also include a summary of annual revenue and expenditure in a form to facilitate comparison with the financial forecast made in the plan.

495. The control journal will be maintained separately for each working circle and must be written up by the District Forest Officer himself or his Gazetted Assistant. It should be therefore taken to camp and critical observations recorded in it during or after inspection. The control journal if maintained properly will be of great help when the plan comes to be revived. A model form showing the headings under which the control journal may be written up is given in Appendix. Additional headings that may be required may be inserted. General comments in addition to the prescribed headings may be noted separately at the end.

496. *Fire control journal.*—This is a record maintained separately to show the details of fire protection measures adopted in the division and the results achieved. Details about its maintanence are elaborated in the section on fire protection.

497. *Control maps.*—The control maps will show on a 4 inches equal to 1 mile (1 centimetre—0.1,584 kilometre) scale, the area proposed for working every year, the area actually worked, areas annually regenerated with the name of the species planted or sown and the date of original planting.

498. *Fire maps.*—These will be separate from control maps and will show the results of fire protection and the areas burnt every year. Serial numbers will be given to all fires in chronological order.

499. A copy of the fire map will be also submitted annually to the Conservator of Forests for scrutiny. The control maps will be posted regularly and made available to the Conservator of Forests for check at the time of Office inspection.

500. *Control Journal for the Teak Plantation Working Circle—*

(1) *Growing stock.*—Notes on the distribution of various species in the annual coupe.

(2) Factors influencing the crop :

(a) Climate.
(b) Animals.
(c) Insects.
(d) Fungi.
(e) Fire.
(f) Man.

(3) Exploitation.—

(a) Notes on the suitability of the present division into felling series.
(b) Notes on the suitability of the methods of working prescribed.
(c) Notes on problems of conversion, dragging and transport of timber.
(d) Notes on contractor's and labour supply.

(4) Measures of improvement. —

(a) Remarks on the conduct of fire protection operations and their results with suggestions as to possible modifications in lay out.

(b) Suggestions for the improvement of communications and export routes.

(5) Artificial regeneration.—

(a) Detailed comments on the success or failure of the artificial regeneration measures prescribed with reasons.

(b) Suggestions for improvement or modifications of technique.

(c) Notes on the relative success attained with each the secondary species viz. Terminalia tomentosa, Dalbergia latifolia and Eucalyptus in areas unsuitable for teak.

Subsidiary Silivicultural Operation—

(a) Notes on the weedings and tendings proposed and suggestions to modify them.

(b) Notes on the thinings prescribed and suggestions modify them.

(c) Notes on conversion and sale of thinned produce.

(d) Notes on nursery practice.—Observation on seeding germinative power and pre-treatment of seeds.

(7) Markets.—

(a) Statement on the prices obtained for various timber species, poles and sale of topends.

(b) Notes on the adequacy of provision made for catering to various local markets.

(c) Prices of timber of various species in local markets with comments.

(8) Summary of revenue and expenditure.—

A summary of annual revenue and expenditure in such a form as will facilitates comparison with the financial forecast made in the working plan.

501. *Control Journal for Softwood working circle.—*

(1) Growing stock.—Notes on the growing stock in the felling series.

(2) Factors influencing the crop.

(a) Climate.
(b) Animals.
(c) Insects.
(d) Fungi.
(e) Fire.
(f) Man.

(3) Exploitation.—

(*a*) Notes on the suitability of the present division into felling series.

(*b*) Notes on the suitability of the methods of working prescribed.

(*c*) Notes on contractors and labour supply.

(4) Measures of improvement.—

(*a*) Remarks on the results of closure to grazing with suggestions about possible modifications.

(*b*) Suggestions for the improvement of communications and export routes.

(5) Artificial regeneration.—

(*a*) Detailed comments on the success or failure of the regeneration measures prescribed with reasons.

(*b*) Suggestions for improvement or modifications of technique.

(*c*) Notes on the merits of kumri cultivation with relative merits of the different kumri crops.

(6) Subsidiary silvicultural operations.

(*a*) Notes on the weedings and tendings proposed and suggestions to modify them.

(*b*) Notes on nursery practice-observations on seeding, germinative power and pre-treatment of seeds. Particular reference should be made on the subject of hybridisation.

(7) Markets.—

(*a*) Notes on the adequacy of provision made for entering to various local markets including industrial requirements if such demands arise later on.

(*b*) Prices of firewood in local markets.

(8) *Summary of revenue and expenditure.*—

A summary of revenue and expenditure in such a form as will facilitate comparison with the financial forecast made in the working plan.

502. *Control Journal for Grazing Working Circle.*— Annual abstracts of grazing permits issued by villages.

The following headings are suggested.—

(*a*) Year.
(*b*) Name of village.
(*c*) Number and description of permits issued.
(*d*) Number and description of permits issued during the previous year.
(*e*) Reasons for increase or decrease.

(2) Notes on the suitability or otherwise of the agency of collection employed.

(3) Notes on the suitability or otherwise of the grazing year adopted.

(4) Notes on the efficiency of closure to grazing.

(*a*) Burnt areas.
(*b*) Areas closed for silvicultural reasons.

(5) Notes on the desirability of closure to grazing of areas specified in the working plan.

(6) Notes on the desirability or otherwise of permitting with particular reference to the damage caused to wildlife.

(7) Statement of revenue and expenditure to facilitate comparison with the financial forecast made in the working plan.

503. *Control journal for Minor Forest Produce.*—(1) Growing stock—Notes on the different items of minor forest produce available in the Division.

(2) Factors influencing the crops—

(*a*) Climate.
(*b*) Animals.
(*c*) Insects.
(*d*) Fungi.
(*e*) Fire.
(*f*) Man.

(3) Exploitation—

(*a*) Notes on the suitability of the present division into units.
(*b*) Notes on the suitability of the methods adopted by lessees and the Co-operative Societies in collecting minor forest produce.
(*c*) Notes on units worked departmentally on account of lack of demand.
(*d*) Notes on lessees and on the labour supply.

(4) Measures of improvements—

(*a*) Suggestions to improve the exploitation of minor forest produce hitherto untapped, if any.
(*b*) Suggestions for the improvement of methods of collection adopted.

(*c*) Relative success or otherwise in the introduction of other Minor Fores tProduce yielding species.
(*d*) Relative success or otherwise in the introduction of other Minor Forest Produce yielding species.

(5) *Markets.*— Statement of prices of various minor forest produce in the local markets.

(6) *Summary of revenue and expenditure.*—A summary of annual revenue and expenditure in such a form as will facilitate comparison with the financial fore cast in the working plan.

CHAPTER X.

ESTABLISHMENT AND LABOUR.

Section 1—Establishments:

504. Establishment of this Division and their distribution to different ranges given in Chapter IV of Part I.

The District Forest Officer of this Division has heavy duties to perform like Protection, eviction of encroachments and carrying out of the forestry operations. He has to carry out the inspection of Regeneration works in various working circle inspection of Forest Protection work, Check-measurement of roads, buildings and other works. He has also to carry out annual Office inspection of Range Offices. Apart from the Kanyakumari regular Division the Cloves Division is also functioning at Nagercoil. This Division has taken up clove plantations over 110 hec. The Division's main work is maintenance of the Cloves Plantations. The Headquarters of Rangers and Foresters in Kanyakumari Forest Division are furnished below:—

1	Ranger, Government Timber Depot ..	Nagercoil.
2	Ranger, Kulasekaram	Kulasekaram.
3	Ranger, Alagiapandipuram	Alagiapandipuram.
4	Ranger, Boothapandi	Boothapandi.
5	Ranger, Upper Kodayar	Kallidaikurichi.
6	Ranger, Survey No. I.	Nagercoil.
7	Ranger, Survey No. II	Nagercoil.
8	Forester, Alagiapandipuram Section ..	Alagiapandipuram.
9	Forester, Thadikarankonam.	Surulacode.
10	Forester, Balamore	Keeriparai.
11	Forester, Kulasekaram	Kulasekaram.
12	Forester, Kalial	Kalial.
13	Forester, Special duty, Lower Kodayar ..	Lower Kodayar.
14	Forester, Assambu	Boothapandi.
15	Forester, Velimalai	Thuvarancaud.
16	Forester, Panangudi	Panangudi.
17	Forester, Aramboly	Aramboly.
18	Forester, Upper Kodayar	Upper Kodayar.
19	Forester, Survey Ranges	Alagiapandipuram.
20	Forester, Government Timber Depot ..	Nagercoil and Aramboly.

Section 2—Labour:

505. Because of number of private Rubber estates, the labour in Kanyakumari Forest Division is scarce and are not easily available. Forest Regeneration operations usually with the season for Agricultural operations. Hence the scarces becomes acute. In Upper Kodayar much difficulty is experienced in getting labour. The labour will have to be paid their wages as in the private estates. Therefore in Kanyakumari Division Forest Schedule of Rates should be fixed taking into consideration the prevelent wage in private estates.

CHAPTER-XI

FINANCIAL FORECAST AND COST OF THE WORKING PLAN.

506. The estimated revenue and expendirure under each working circle fo the period of this plan are given in the following statement :—

(1) TRIBAL RESOURCES (KANIS) DEVELOPMENT WORKING CIRCLE :

Year.	*Revenue in Rupees.*	*Expenditure in Rupees.*
(1)	(2)	(3)
1988-89 ..	..	75,15,000
1989-90 ..	..	94,00,000
1990-91 ..	..	57,00,000
1991-92 ..	..	19,00,000
1992-93 ..	..	17,00,000
1993-94 ..	..	17,00,000
1994-95 ..	..	17,00,000
1995-96 ..	..	17,00,000
1996-97 ..	..	17,00,000

(2) TEAK WORKING CIRCLE :

1988-89 ..	5,48,000	1,82,400
1989-90 ..	7,84,000	2,61,250
1990-91 ..	9,62,000	3,20,000
1991-92 ..	4,36,000	1,45,000
1992-93 ..	6,50,000	2,15,000
1993-94 ..	4,00,000	1,30,000
1994-95 ..	2,40,000	80,000
1995-96 ..	3,10,000	1,05,000
1996-97 ..	3,30,000	1,10,000
1997-98 ..	5,00,000	1,60,000

(3) CATAMARAN WORKING CIRCLE..

1988-89 ..	14,00,000	..
1989-90 ..	2,00,000	5,70,000
1990-91 ..	4,00,000	85,000
1991-92 ..	1,00.000	1,50,000
1992-93 ..	2,75,000	42,000
1993-94 ..	50,000	1,10,000
1994-95 ..	6,00,000	20,000
1995-96 ..	7,00,000	2,50,000
1996-97 ..	3,00,000	2,75,000
1997-98 ..	..	1,20,000

(4) BAMBOO WORKING CIRCLE :

1988-89 ..	..	..
1989-90 ..	..	..
1990-91 ..	..	..
1991-92 ..	..	..
1992-93 ..	..	..
1993-94 ..	..	..
1994-95 ..	1,90,000	..
1995-96 ..	1,95,000	
1996-97 ..	2,00,000	
1997-98 ..	2,10,000	

(5) ECO-RESTORATION WORKING CIRCLE :

Year.	*Revenue in* Rupees	(*Expenditure including planting.*
(1)	(2)	(3)
1988-89 ..	..	4,00,000
1989-90 ..	..	4,00,000
1990-91 ..	..	4,00,000
1991-92 ..	..	4,00,000
1992-93 ..	..	4,00,000
1993-94 ..	..	4,00,000
1994-95 ..	..	4,00,000
1995-96 ..	..	4,00,000
1996-97 ..	..	4,00,000
1997-98 ..	..	4,00,000

(6) SOIL CONSERVATION WORKING CIRCLE :

1988-89 ..	..	1,40,000
1989-90 ..	..	1,45,000
1990-91 ..	..	1,50,000
1991-92 ..	..	1,55,000
1992-93 ..	..	1,60,000
1993-94 ..	..	1,65,000
1994-95 ..	..	1,70,000
1995-96 ..	..	1,75,000
1996-97 ..	..	1,80,000
1997-98 ..	..	1,85,000

(7) GRAZING WORKING CIRCLE :

1988-89 ..	19,250	..
1989-90 ..	19,350	..
1990-91 ..	19,450	..
1991-92 ..	19,550	..
1992-93 ..	19,650	..
1993-94 ..	19,750	..
1994-95 ..	19,850	..
1995-96 ..	19,950	..
1996-97 ..	20050	..
1997-98 ..	20,150	...

(8) WILDLIFE MANAGENEMT WORKING CIRCLE :

1988-89 ..	..	95,000
1989-90 ..	..	1,00,000
1990-91 ..	..	1,05,000
1991-92 ..	..	1,10,000
1992-93 ..	..	1,15,000
1993-94 ..	..	1,20,000
1994-95 ..	..	1,25,000
1995-96 ..	..	1,30,000
1996-97 ..	..	1,35,000
1997-98 ..	..	1,40,000

(9) MISCELLANEOUS WORKING CIRCLE :

1988-89 ..	60,000	2,60,000
1989-90 ..	65,000	1,00,000
1990-91 ..	65,000	2,00,000
1991-92 ..	70,000	1,00,000
1992-93 ..	75,000	1,25,000
1993-94 ..	75,000	1,30,000
1994-95 ..	80,000	1,35,000
1995-96 ..	80,000	1,60,000
1996-97 ..	90,000	50,000
1997-98 ..	90,000	50,000

COST OF WORKING PLAN :

The cost of preparation of this Working Plan is as follows :—

(1)	Pay of Officer	54,200.00
(2)	Pay of establihsment (Temporary and Permanent) ..	3,36,189.40
(3)	Dearness Allowance	71,586.20
(4)	Travelling allowance including F.T.A.	1,10,921.50
(5)	Medical Chargee	.. ..
(6)	Additional Dearness Allowance	21,217.05
(7)	Other Allowances	53,719.65
(8)	Rent, Rates ann Taxes	5,150.00
(9)	Office expenses	13,188.50
(10)	Minor Works	10,000.00
(11)	Maintenance	5,953.25
(12)	Cost of Fuel	29,952.55
	Total ..	7,12,078.10

Hence the per hec. cost of working plan comes as Rs. 15.55.

CHAPTER-XIII

Summary of Prescription

CHAPTER-I—BASIS OF PROPOSALS

Paragraphs

Scope.—The working Plan covers the Kanyakumari Forest Division as constituted from 1977 255

Objects of Management.—The objects of Management are briefly :—

(*i*) To improve the living conditions of tribals living in the division, by providing the basic amenities and schemes to build economic resources giving sustained income throughout the year ..

(*ii*) To cater to the requirement of local fishermen by providing Albizzia falcataria logs for making the catamarans and to meet the need of match factories to the extent possible.

(*iii*) To harvest the resources of the forest such as teak, softwood, Bamboo and reeds etc., on sound principles of silviculture.

(*iv*) To protect and conserve the forests in the interests of Soil conservation, Forest conservancy and wildlife conservation.

(*v*) To restore the degraded eco-system by planting suitable areas with fuel species and thereby meeting the fuelwood demands of the public to the extent possible.

(vi) To provide grazing facilities to cattle that depend on the forests.

(*vii*) To harvest the existing minor forest produce and to meet the demand of raw materials to the forest based industries to the extent possible.

Working Circles.—The following working circles have been constituted 258

(*i*) Tribal resources (Kanis) Development working circle.

(*ii*) Teak Working Circle.

(*iii*) Catamaran Working circle.

(*iv*) Bamboo Working Circle.

(*v*) Eco-restoration Working Circle.

(*vi*) Soil Conservation Working Circle.

(*vii*) Grazing Working Circle.

(*viii*) Wildlife Management Working Circle.

(*ix*) Miscellaneous Working Circle.

Period of the Working Plan:—The working plan will be in force for a period of 10 years from 1st April 1988 to 31st March 1998. For any eventually of continuance of the plan prescription and suggestions are given for the succeeding 5 years 263

CHAPTER II—TEAK WORKING CIRCLE.

Object of Management.—The object of this working circle is just to manage profitably the existing teak plantations as no fresh planting of teak is proposed during this plan period 264

General constitution.—The working circle consists of all the existing teak plantations in Kanyakumari Division .. ..

Paragraphs.

Area.—The area of the working circle is 2,232.00 hectares 266

Division of the area.–The working circle is divided into two series,viz., Kulasekaram and Alagiapandipuram. Kulasekaram series will consists of all the plantations of Kulasekaram Range and Alagiapandipuram series will consists the plantation of Alagiapandipuram and Boothapandi Ranges 266

:aracter of the Vegetation.—The teak plantations excepting a few are not as promising as they should be considering the locality factors .. 267

Analysis and valuation of the crop.—The first teak plantation was raised in Kanyakumari district in 1921 as an experiment and it has been continued till 1978. During the plan period no teak plantation is due for felling hence no revenue is expected 268

Silvicultural System.—The Silvicultural System adopted in this working circle will be clear-felling system 270

Choice of Species.—Teak only was raised 272

Rotation.—The rotation is fixed as 80 years 273

Regulation of yield.—No clearfelling is contemplated during this plan period and the yield only from thinnings 276

Silvicultural Regulations.—The existing plantation will be improved and maintained by carryingout thinning operations in each plantation 27

Thinning.—The thinnings will be carried at the ages of 6, 12, 20, 30 and one final thinning will be done at 40. The first thinning as usual will be mechanical and the rest will be silvicultural and degree of thinning will be ' C ' grade. 278

Marketing rules for thinning.—The relevant marking rules for thinning are given 279

Thinning Programme.—A statement showing the plantations to be thinned in each year is given 280

Explaitation of 15 thinned produce.—Trees above 90 c.m. girth will be treated as logs and sent to the Nagercoil Timber Depot for sale. The rest of the poles and top ends and miscellaneous growth will be sold in auction at site 281

Other Regulations.—Erection of plantation Board, Fire protection measures and the records to be maintained as control are given 282

CHAPTER III—CATAMARAN WORKING CIRCLE.

Object of Management.—The object of this working circle is to meet the demands of fishermen community to build their catamarans and to meet the growing need of several match factories in Kanyakumari and neighbouring districts 286

General constitution.—This working circle consists of all the areas planted wirh softwood species in Kanyakumari district 287

Area.—The total area under this working circle is 1,887.37 hectares .. 288

Analysis and valuation of crop.—In the existing plantations, sample enumeration was carried out. The value of trees various from year to year 289

Paragraphs.

Silvicultural system.—The Silvicultural system will be clearfelling followed by artificial regeneration 295

Rotation.—The rotation for Albizzia falcata will be 10 years and Bombax ceiba 35 years 296

Regulation of yield.—The yield will be regulated by area in general .. 297

Demarcation and Survey.—The annual coupes to be clearfelled as per prescription, on the ground demarcated by a out line 2 M. wide and surveyed 298

Felling.—Annual areas to be clearfelled and replanted with Albizzia falcata will be exploited through the agency of contractor 299

Nursery.—Seeds will be collected from the *plus* trees and will be sown in 13×25 cm. poly bag. 300

Clearing and burning.—A fire line 5 M. wide shall be cut all round the the regeneration area and this will be scraped and burnt at the beginning of February shortly before the regeneration area is burnt .. 301

Aligning and Staking.—The espacement will be 3×3m. the length of stakes should be at least 50 cm. 302

Pitting.—30 cm. cube pits will be dug at each stack and dug out soil allowed to weather for at least one month 303

Planting.—Optimum size seedlings will be planted in 45 cm. pits at 3M.×3 M. espacement on the onset of south west monsoon, i.e., in the month of June itself 304

Kumri.—The Kumri cultivation has been the cause of failure or poor performance of many plantations 305

Replacement of casualities.—During the first year casualities will be replaced 306

First year Weeding and Soil working.—There will be 4 weeding and soil working in the first year. The plants will be kept free of weeds and agricultural crops to a radious of 50 cm. 307

Second year weeding.—In 2nd year 2 weedings will be sufficient .. 308

Thinning.—Albizzia falcata being a fiast growing species needs much of growing space so a silvicultural thinning will be removed resulting in an espacement of 4.25 M. 309

Other Regulations.—Plantation Board, Inspection paths, Fire protection and control records will be maintained 311

CHPATER IV—BAMBOO WORKING CIRCLE.

Object of Management.—The main object of this working circle is to manage the existing bamboo plantations 316

General constitution.—The Bamboo working circle comprises of all Bamboo bearing areas in Kanyakumari division 317

Character of Vegetation.—Bambusa bamboo is the predominent species and occur in the moist deciduous type of forests 318

Division of the Area.—The working circle will have only one felling series having 3 coupes 319

Paragraphs.

Analysis and valuation of crop.——Rules regarding the working of Bamboo were not followed properly. Hence there have been over exploitation of Bamboo and it is proposed to suspend the working of Bamboo coupes for six years in this plam period 320

Method of treatment.—The prevailing silvicultural system of selection thinning of clumps consisting of removal of individual mature culms in accordance with the felling rules will continue 321

Felling cycle.—A felling cycle of 3 years is prescribed for the working of Bamboos 322

Regulation of the working.—The regulation of working will be by area. The felling series has been divided into three coupes with permanent boundaries, readily distinguishable natural features like bridges, streams, foot-paths, River , etc. 323

Sale Unit.—The coupe sale formed the unit of lease. It will be worked again according to its next turn in sequence of felling period of lease will be from 1st April to 1st March or the date of agreement to 31st March 324

Agency of Exploitation.—The agency will be either the companies authorised by Government or agency of contractors 325

Felling Rules.—The felling rules are prescribed 326

Tabular statement of felling.—As the existing stock of Bamboo is poor. Hence it is decided to give rest for six years in this plan period so that the Bamboo can re-establish. After six years the District Forest Officer can inspect the coupes and if he finds that the Bamboo can be allotted, then he should a submit proposal to the competent authority for disposal of Bamboo. The year-wise felling statement is given 328

Other Regulations.—A monthly account of all removal of bamboos shall be rendered to the Range Officers by the lessees. Special mention should be made in the control journal about the flowering of bamboo. Bamboo area will be patrolled intensively during fire season. Fire watchers should be appointed in fire season. Control forms related to this working circle shall be posted at the end of every year 329

CHAPTER V—ECO-RESTORATION WORKING CIRCLE.

Object of Management;—The object of this working circle is to destore the destroyed and last ecosystem back to its original shape as far as possible by planting suitbale tree species in degraded forests. 339–341

General constitution.—This working circle constitute the fuel plantation already raised and the plantation proposed during this plan period .. 347

Character of the Vegetation.—The southern tropical thorn forest commonly known as scrub jungle in which thorny species predominate. The terrain is mostly flat ground or low undulating hillocks and the rainfall varies from 50 cm. to 75 cm. and bulk of which is derived from North-east monsoon commencing in October 348

Division of the area.—An area of 500 hectares has been proposed to be taken up for plantation during the plan period 350

Analysis and valuation of crops.—The areas proposed for inclusion of of this working circle are suitable for regeneration. A detailed statement showing the existing plantation raised is mentioned herewith .. ..

Paragraphs.

Valuation of crop.—As the area included in this working circle do not contain any exploitable growth, no valuation surveys was considered necessary 352

Silvicultural System.—The Silvicultural system adopted will be to artficially restock therse degraded area with suitable species 353

Choice of Species.—The main species will be Acacia planifrons, Acacia ferrugenia, Acacia leucoploea, Albizzia lebbeca and Albizzia amara, etc. 354

Survey and demarcation.—The annual regeneration area will be demarcated on the ground in accordance with the planting series map by cut lines 2 M. wide 357

Aligning and staking.—Aligning and staking will be done at an espacement of 3M. × 3 M. 358

Planting.—North-East monsoon may set in at any time after the 1st week of October and as soon as the rains set in, the container plants shoul'. be planted in pits 359

Nursery.—Acacia planifrons seeds should be collected locally from sound and well grown trees. The seeds should be separated from the pericarp dried and stored in gunny bags 360

Nursery site.—The nursery should be located as far as possible near the planting site taking ensuring unfailing water source. The lead from the nursery site to the planting area should be minimum 361

Preparation of container plants.—The nursery operations should be commenced. Sufficiently in advance so that all the containers do have a well growth seedling of atleast 50 cms. height at the time of planting out. To achieve this the nursery operations should be started in January of the year of planting. The container should be of 150 guage, 25 cms. in height and 10 cms. in diameter 362

Replacement of casualities.—During the first year casualities will be replaced as and when they occur by going the area frequently during the 1st month itself so that full stocking is relieved in the 1st year. However casualities if any will be replaced in the 2nd year during the early monsoon period 363

Weeding and Soil working.—The 1st weeding will be done in combination with soil working to a depth of 15cm. and to a with of 50 cms. around each plant a month after planting. The second weeding consisting of thesame operations will be done and completed towards the end of monsoon but definitely before the last showers. During the 2nd year two weedings combined with soil working will be done first in October along with replacement of casualities soon after the North-east monsoon setsin and the second in December 364

Other Regulations.—The planted area will be fenced with chain link fencing. The area regenerated will be indicated by a small board of uniform also fixed at salient points. the area should be closed to grazing for a period of 5 years. Inspection paths should be provide for inspection of the remote parts 365

CHAPTER VI—SOIL CONSERVATION WORKING CIRCLE.

Paragraphs.

Genearl Constitution.—This is an overlapping working circle .. 3?

Dvision of the area—The whole divission will come under this working circle : 381

Method of Treatment.—Construction of check dam and construction of stone walls contour with rough stone dry packing and semi circular terracing will be carried out in kani settlements 382

Other Regulations.—Account of check dams and contour trenching constructed in the plantation will be maintained in the Range Office 385

CHAPTER VII—GRAZING WORKING CIRCLE.

Object of Management.—The object is to provide adequate pasture for the cattle in the villages adjoining the forests 386

General constiiution.—The working circle will include all the forest areas throughout the division with the exception of such of those areas closed to grazing for silvicultural reasons 387

Closure to Grazing.—All the plantations will be closed for a period 5 years from the year of formation 388

Other Forest Division.—An extent of 4785.70 hectares of rubber plantations, occuring within the jurisdiction of this division are exclusive control of the Managing Director, Arasu Rubber Corporation, Nagercoil, Similarly an extent of 110 hectares of clove plantation are under the control of a separate Divisional Forest Officer 389

Incendiarism.—Usually fires in these forests are man made. Areas sibject to incendiariam may be closed to grazing subject to the condition that the aggregate of the areas so closed at a tune does not exceed 500 hec. and provided that the District Forest Officer sends a report to that effect to the Collector and Chief Conservator of Forests through the Conservatior of Forests. This course will be adopted when the District Forest Officer consideres that the burnt area is so extensive and damage to the forest so serveces to warrant closure to grazing .. 390

Grazing Notification.—Every year, not later than May, a notification regarding graoing, specifying the areas closed to grazing and the condition regulatings the grazing will be published in the district gazette : 391

Grazing Unit.—The whole division forms one grazing unti and accordingly a graging permit issued at any one place is valid for the whole division 392

Regulation of grazing.—All animals except goats may be licenced to graze inside the forest. Greazing will be opened to cattle covered by grazing permits 393

Concessions.—The Kanis will be given free grazing permits for their own cattle 402

CHAPTER VIII—TRIBAL RESOURCE (KANIS) DEVELOPMENT.

General constitution—

The object of this is to improve the living condition of Kanis by providing basic intrncture and to bring as many kani tribals as possible above poverty line 404

This consist of 47 kani settlements in the division.

Paragraphs

Area.—The total area under Kani settlement in Kanyakumari Division is 1257.38 Ha. 406

Character of vegetation.—The main crop cultivated by Kapis in Tapioca, Banana, Arecanut, Jack, etc. .. ..

Division of Area.—There are 47 Kani settlement inside the Forest area and are situated within the catchment areas of Perunchani, Pachiparai and Chithar reservoir. The list of Kani settlement are: given 408

Analysis.—The Kanis were doing shifting cultivation inthe past, prior to 1911. Butduring 1911 the Travancore Government, allotted Kani settlements by setting apart certain forest areas occiupied by them as kani settlement and they are non-confimed in the Kani settlement withinthe Reserve Forest of Kanyakumari district 409

Method of Execution of work–The prescripticns made are on the lines of detailed proposals sent by the Chief Conservator of Forest to Government (Special welfareDepartment),at the time of writting of this plan Government is seized of this proposal. Therefore, as and when the scheme is sanctioned the work proppssed can be taken up. However to improve the economic conditions of the Kanis, schemes are propcsed are given 411

CHAPTER IX.—MISCELLANEOUS REGULATIONS.

Minor Forest Produce.—This will cover all the reserves and unreserves of the division. The important items of MinorForest Prpduce occuring in the division are given. The right to collect Minor Forest Produce will be sold in auction each year the lease period will be 1st July to 30th June 429

CHAPTER X—WILDLIFE.

General constitution.—This include all species of Fauna, Avifauna found in the Division 441

Division of the area.—This is overlapping and covers the entie division : 444

Population.—No census has been carried out in the Division 445

System of Management.—Conservation for nature selection system will be followed 455

Demarcation.—Habitat of important animals like elephants, deer, Sambhar, bear, gaur, monkey have been demarcated on Management map 456

Habitatal mprovement work.-Lease disturbance and provision of adequate drinking watr are the prime requiement of all the animals .. 457

Providing salt licks at suitable points.—In Muthukaduvayal and Upper Kodayar at suitable points salt licks should be provided: 458

Construction of percolation ponds.—In Muthukaduvayal Asambu R.F. and Mahendragiri R.F. many percolation ponds should be constructed at the rate of two percolation ponds each year : 459

Procenttio.—Wildlife protection Act should be implemented effectively.: 460

Parygraph.

Fire Protection.—During the summer months fire become common feature and causes damage to the forest. In the natural forests the outersiopes upto an elevation of 350 mets.are the worst affected by fire because of topography and grazing interests. Majority of fires are usually caused by grazletsas such they are frequently seen in the ares of high cattle concentration. Nothing can be more effective than intensive patrolling of vulnerable localities during fire season and heavy penalty on these who indulge in such vadalism. Keeping in view the vast area the list of measures are suggested : 463

Boundaries.—The survey and demarcation and providing pillars with cement concret alongthe boundaries of the enclosures andPheripeiies R.F. are being carried out from 1978–79. Two Rangers and two Forests have been appointed specifically for this purpose. Till now 5743 stones have been planted and the details are given 469

Inter State Boundary was agreed during the joint discussion regarding the Inter State boundary between Kerala and Tamil Nadu held at Kannanur, 15th and 16th March,1985 that the clearrance of the Boundary passing through the Kilamalai R.F. should commence from 6th April 1985. For this purpose survey staff of 2 surveyor from each state have to be deputed. The totall ength of Inter State boundary is 9 K.M. The District Forest Officer should maintain these planted stones: .. ..

Buildings and Wells.—A list of buildings in the division is given. All the buildings both old and new shall be kept in a state of good repair. During the last plan, it was proposed to renovate the old Range Officers quarters at Kulasekaram, Alagiapandiapuram and Vadaseri, but the work was not carried out. During this plan period allthe old buildings in this division should be given a special repair. During this Plan, period, new buildings should be constructed and list are given. The list of existing wells will be main tained in good shap so that the water from them can be used at all times. During this plan period, construction of new well at Thdaikarnjonam should be constructed for the water supply of subordinates, but it was not been consturcted, at least during this plan period this well should be constructed. : 470

Road.—A list of roads maintained in this division has been given. No new road was constructed during the plan period. The existing roads have not been been maintained properly hence it is proposed that without fail the annual maintanance should be carried out. No new road is proposals posed during this plan period 474

Rain gauges.—No rain gauges have been maintained in this division. It is essential to install rain gauges in different rainfall zones of the division. The maintained and protection of raingauges should be entrusted to the nearest executive staff. Monthly report should be got from the manentered in a register in the District Forest Office 475

CheckPost.—As present there are eight chek posts and list are given. In the last plan also it was mentioned that these check post building should be made permanent buildings. But no follow up action was taken up. However during this plan period these temporary check post should be convereted into permanent bui.dings 476

Electricity Board.—For establishing Kodayar Hydro Electric Project in Kanyakumri District 232 acres of Forest land in Kodayar Lower camp (Veerapuli and Klamalai R.F.) and 178.9 acres of Forest land in Kodayar Upper Camp (Veerapuli R.F.) were ceased out to the Tamil-Nadu Electricity Board during 1983 478

Paragraph.

Out of which the Tamil Nadu Electricity Board requires 54.0624 acres of land in Upper Kodayar and 79.184 acres of land in Lower Kodayar permanently for the project. So far they have remitted Rs. 4.03.795.20 Rs. 4,03,795.20 towards lease rent a rate of Rs. 60 per acre pr annuam In G.O. Ms. No. 1040, F &F& Department, dated 30th September 1986 communicted in the Chief Conservator 's No. G4/69457/77-47, dated 6th November 1986, it has been ordered that no lease rent should be collected from Tamil Nadu Electrical board for all Hydro Electric Project beyond 5 years and only land cost should be collected from the Tamil Nadu Ele tricity Board for the area permanetly requird by them. They requires 133.2464 acres of land. Action is being taken to send proposal to Government for permanent transfer of 133.2464 acres to Tamil Nadu Electricity Board .. .. ..

Cardamom lease.—There are 15 cardamom lease units in Alagiapandipuram Range of This Division. A list is given. In respect of of blocks I to V of Ponmanai village and I to VI of Balamore the kist amount due for the year 1986 due as on 1st October 1986 has not been paid. The lease have been cancelled. Now the lesses have represented that the are ready to pay the lease rent due with penal interest along with necessary penalty for the default. In respect of the other 5 blocks the lessees have paid the kist amount land cess and education cess up to the year 1986 due as on 1st October 1985 .. ..

After the lease time as per the Conservation Act 1980 as per the copy of Government of India Lr. No. 2-1;82 FRY;Ministry of Agriculture, dated 5th May 1982 communicated in Chief Conservator 's Endt. No. 45481;82-1, dated 10th May 1982. Use of forest area for growing commercial crop such a cardamom with abstract of Forest Conservation Act 1980 .. ..

Cloves Division.—In Kanyakumari District, Alagiapandipuram Range, Mahendragiri R.F. at an elevation of about 600 M. 9 hec of cloves plantation raised. Cloves division was formed as per G.O. Ms. No. 700/F &F dated 24th July 1985 communicted in Chief Conservator's No.7410/74/J2, dated 7th August 1985. This plantation was raised at Maramalai in Veerapuli R.F. at an elevation ranging from 350 to 550 M. to extent of 102 hec. Totally the division has raised 110 hec. The yield obtained and revenue realised so far is given 484

Arasu Rubber Corporation Limited.—The Rubber circles (East and West were formed in an extent of 4786.70 hec. in Kanyakumari district. As per G.O. Ms. No./197F&F Deprtment, dated 25th February 1985 these plntation have been brought under Arasu Rubber Corporation Limited under the control of Chairman cum Managing Director at Nagercoil. The Conservator of Forest at Thakkalai has been designated as General Manager of the corporation There are 9 Rubber Division in this corporation and two rubber factories, one at Keeriparai and other one at Perunchani. The above two factories are producing rubber sheets and concentrated latex .. .. ..

Control.—The control records and Maps which are to be maintained in the District Forest Office have been dealt with under the various working circle, Brief detils of each of these records and the manner in which they should be maintained are given .. .. ..

STATEMENT SHOWING THE MONTHLY RAINFALL (IN MILLI METRES) FOR THE VARIOUS RAIN GUAGE STATION IN KANNIYAKUMARI FOREST DIVISION.

FOR THE YEAR 1975.

Name of the Station.	*January.*		*February.*		*March.*		*April.*		*May.*		*June.*	
	RF.	*RD.*	*RF.*	*RD.*	*RF.*	*RD.*	*RF.*	*RD.*	*RF.*	*RD.*	*RF.*	*RD.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Peohiparai	5.0	2	35.3	5	56.6	10	277.0	14	153.0	8	344.0	25
Kulasekaram	..	..	..	..	80.0	5	485.0	11	92.0	8	285.0	20
Puthandam	..	..	26.6	3	66.0	7	209.6	9	142.1	9	301.9	18
Surulacode	..	..	15.8	2	125.8	12	224.7	16	132.3	7	313.4	24
Thadikarankonam ..	..	..	122.8	2	91.1	7	381.8	12	115.2	6	328.1	23
Nagercoil	..	..	5.1	1	35.2	3	260.7	8	52.9	7	207.9	22
Seethapal	..	..	4.6	1	40.0	5	263.1	10	44.1	3	171.7	14
Balamore	7.2	1	..	..	44.4	6	233.6	6	188.7	9	605.4	25

Name of the Station.	*July.*		*August.*		*September.*		*October.*		*November.*		*December.*	
	RF.	*RD.*	*RF.*	*RD.*	*RF.*	*RD.*	*RF.*	*RD.*	*RF.*	*RD.*	*RF.*	*RD.*
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	90.3	10	178.5	13	383.4	13	287.2	17	293.6	16	32.4	4
Kulasekaram	76.0	11	188.7	14	353.0	17	275.9	15	284.4	17	42.3	6
Puthandam	128.7	9	141.1	11	318.0	15	246.7	15	309.9	14	72.6	4
Surulacode	146.1	8	154.7	16	339.1	15	282.7	17	277.7	17	54.6	6
Thadikarankonam ..	94.2	8	189.2	13	356.7	16	227.6	16	214.0	18	28.2	5
Nagercoil	69.6	6	94.1	10	123.3	9	89.6	12	195.5	15	17.4	6
Seethapal	31.6	3	49.8	8	83.9	6	57.4	6	80.3	9	4.5	1
Balamore	216.5	13	382.8	19	456.1	17	434.0	24	384.2	16	83.2	6

For the year 1976.

Name of the Station.	January.		February.		March.		April.		May.		June.	
	RF.	RD.	RF.	RD.	RF.	RD.	RF.	RD.	RF.	RD.	RF.	RD.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pechiparai	—	—	..	..	44.0	2	263.4	14	159.6	10	125.0	8
Kulasekaram	—	—	..	..	20.0	1	124.8	8	46.2	6	43.0	6
Puthandam	—	—	..	..	44.3	2	158.7	11	113.5	5	66.0	4
Surulacode	—	—	..	..	54.6	3	165.8	10	73.0	4	83.4	6
Thadikarankonam	—	—	..	..	75.5	4	147.5	10	107.0	6	60.0	5
Nagercoil	—	—	..	..	66.0	2	203.8	6	88.9	3	11.5	2
Seethapal	—	—	..	..	72.4	2	82.5	6	4.6	1	11.3	2
Balamore	—	—	..	..	42.1	2	183.4	12	130.2	12	156.6	12

Name of the Station.	July.		August.		September.		October.		November.		December.	
	RF.	RD.	RF.	RD.	RF.	RD.	RF.	RD.	RF.	RD.	RF.	RD.
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	127.5	13	181.4	14	91.6	7	430.9	23	573.4	22	62.0	5
Kulasekaram	27.2	6	27.0	10	33.2	9	247.5	22	288.1	21	..	..
Puthandam	75.2	5	96.2	9	25.7	5	352.5	23	453.2	25	14.7	4
Surulacode	64.1	13	76.3	10	26.0	4	277.3	22	327.1	26	6.1	3
Thadikarankonam	102.4	10	117.6	9	35.7	6	409.3	23	257.0	24	4.4	2
Nagercoil	32.0	7	83.8	8	6.7	2	191.4	15	269.5	18	40.7	3
Seethapal	20.0	4	35.2	7	..	..	148.0	16	129.4	17	10.4	1
Balamore	299.0	21	299.5	15	268.8	11	321.2	20	607.7	27	49.1	6

FOR THE YEAR 1977.

Name of the Station.	January.		February.		March.		April.		May.		June.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pechiparai	..	..	100.0	3	84.3	9	323.5	14	469.7	16	177.8	16
Kulasekaram	..	..	46.0	2	46.5	3	281.0	10	592.7	15	66.5	10
Puthandam	..	..	154.8	2	73.2	6	156.4	8	523.0	19	126.0	15
Surulacode	..	..	23.0	3	50.3	4	101.6	8	335.7	16	177.9	18
Thadikarankonam ..	..	..	64.4	4	28.0	3	102.6	10	360.1	14	127.4	18
Nagercoil	..	..	69.0	4	9.0	3	65.8	5	201.5	15	44.9	7
Seethapal	..	..	45.2	2	25.7	2	97.2	8	129.4	9	18.7	3
Balamore	..	..	162.7	3	4.5	1	356.6	13	305.7	17	271.8	19

Name of the Station.	July.		August.		September.		October.		November.		December.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	123.1	10	109.8	7	193.0	9	660.7	24	382.7	17	66.0	2
Kulasekaram	64.4	8	33.7	5	52.7	6	335.4	21	257.2	15	7.0	1
Puthandam	123.6	8	68.7	6	103.8	8	553.7	22	382.5	13	46.3	2
Surulacode	68.0	10	70.9	8	120.6	9	369.0	22	336.2	17	29.5	3
Thadkarankonam ..	88.9	9	56.4	8	128.2	8	395.4	22	252.1	17	11.1	1
Nagercoil	92.2	9	57.6	5	62.0	4	468.1	20	345.3	18	17.0	1
Seethapal	37.0	8	20.2	4	23.0	4	288.2	16	200.8	14	..	..
Balamore	202.9	11	270.2	12	604.8	15	1811.4	30	392.1	16	..	..

FOR THE YEAR 1978.

Name of the Station.	January. RF	January. RD	February. RF	February. RD	March. RF	March. RD	April. RF	April. RD	May. RF	May. RD	June. RF	June. RD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pechiparai	16.0	1	12.0	1	94.2	8	98.0	7	118.0	13	122.6	12
Kulasekaram	—	..	..	..	106.4	8	68.1	2	222.5	15	145.6	8
Puthandam	—	..	..	..	73.6	9	65.4	5	304.9	11	141.6	9
Surulacode	10.3	2	2.8	1	79.8	8	91.7	3	172.5	13	131.3	11
Thadikarankonam	25.5	2	11.9	2	74.4	5	69.1	6	274.5	19	85.9	10
Nagercoil	60.0	1	5.7	1	29.9	3	103.3	5	89.0	7	89.9	11
Seethapal	6.1	1	4.2	1	14.0	3	48.0	5	24.8	1	49.1	8
Balamore	—	..	6.8	1	60.1	3	115.2	5	211.1	15	261.0	14

Name of the Station.	July. RF	July. RD	August. RF	August. RD	September. RF	September. RD	October. RF	October. RD	November. RF	November. RD	December. RF	December. RD
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	216.2	20	231.0	15	73.0	2	478.5	21	377.1	9	118.0	7
Kulasekaram	105.6	17	141.8	8	50.2	2	250.7	12	651.6	10	33.1	3
Puthandam	83.0	15	53.8	14	10.5	1	172.0	10	625.8	10	43.0	4
Surulacode	82.2	9	113.3	12	48.0	4	354.7	14	533.3	12	31.7	7
Thadikarankonam	109.3	19	114.2	13	66.0	4	272.9	16	552.7	12	18.4	4
Nagercoil	35.0	5	40.4	4	—	..	175.1	13	690.0	14	33.2	4
Seethapal	55.0	10	47.0	6	—	—	161.9	10	525.5	11	19.3	4
Balamore	158.9	17	199.2	17	181.7	14	111.5	26	908.0	22	110.1	3

FOR THE YEAR 1979.

Name of the Station	January.		February.		March.		April.		May.		June.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pechiparai	..	..	165.0	8	79.0	5	180.0	9	175.5	6	738.0	16
Kulasekaram	..	..	187.3	8	12.5	3	30.0	1	..	..	282.0	8
Puthandam	..	..	196.7	7	65.8	3	20.8	3	20.3	3	363.8	12
Surulacode	..	..	121.7	8	36.4	7	105.2	6	27.3	2	187.8	11
Thadikarankonam ..	..	..	81.7	8	62.9	4	63.2	5	4.5	1	232.5	9
Nagercoil			90.7	5	..	..	..	..	43.9	3	57.9	9
Seethapal			27.8	5	2.2	1	..	..	5.4	2	73.7	8
Balamore			186.2	7	22.6	2	53.0	4	36.8	3	297.9	15

Name of the Station.	July.		August.		September.		October.		November.		December.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	330.6	20	145.0	12	277.0	21	359.5	17	582,6	25	108.5	6
Kulasekaram	137.7	11	52.0	4	179.0	14	248.0	10	185.0	12	46.0	4
Puthandam	134,8	13	115.5	11	116.7	12	249.1	12	373.1	19	77.1	5
Surulacode	82.7	10	105.3	10	140.5	13	226.4	10	240.8	19	105.5	3
Thadikarankonam ..	83.0	4	67.6	8	221.7	13	276.7	16	484.5	22	47.6	5
Nagercoil	55.9	6	97.6	7	104.0	20	228.2	9	351.5	21	95.0	2
Seethapal	25.9	3	42.3	4	105.8	11	208.3	13	423.6	15	98.0	2
Balamore	181.0	14	115.6	9	174.4	13	318.1	16	382.5	20	80.4	4

FOR THE YEAR 1980.

Name of the Station.	January.		February.		March.		April.		May.		June.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pechiparai	...	..	..	..	190.5	5	204.9	15	200.5	17	395.4	22
Kulasekaram	...	..	..	..	24.0	3	18.2	3	44.8	4	111.0	10
Puthandam	...	..	..	..	69.1	5	178.1	6	205.2	10	275.6	13
Surulacode	...	..	..	..	71.8	4	104.0	6	112.5	5	250.5	16
Thadikarankonam ..	...	...	..	..	12.9	1	62.9	3	76.4	6	180.0	15
Nagercoil	..	...	..	..	5.0	1	77.0	5	15.1	2	175.0	15
Seethapal	..	...	..	..	10.2	1	66.1	5	16.6	2	60.0	10
Balamore	...	...	...	..	20.4	2	81.6	3	327.6	14	232.0	17

Name of the Station.	July.		August.		September.		October.		November.		December.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	144.5	14	165.4	14	155.0	7	217.6	17	225.2	12	183.2	9
Kulasekaram	22.0	3	45.0	8	29.3	4	101.0	7	79.0	9	67.3	8
Puthandam	107.5	13	103.3	11	70.4	5	242.3	11	151.9	14	120.4	8
Surulacode	57.2	5	90.0	12	48.4	6	131.8	10	169.0	16	220.4	12
Thadikarankonam ..	20.6	3	Rain Guage damage.									
Nagercoil	150.5	14	34.0	5	76.3	6	191.3	10	162.1	9	380.4	9
Seethapal	91.4	11	3.2	1	17.2	2	109.1	5	110.9	8	56.7	5
Balamore	59.6	10	102.6	3	153.7	3	591.7	3	55.2	6	169.8	5

FOR THE YEAR 1981

Name of the Station.	January.		February.		March.		April.		May.		June.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pechiparai	24.0	2	15.0	2	146.9	7	180.6	12	187.6	8	669.1	21
Kulasekaram	2.0	1	..	..	27.2	3	53.1	5	114.2	6	443.9	21
Puthandam	2.0	1	5.8	2	78.5	3	120.8	10	114.3	7	483.5	19
Surulacode	3.4	1	1.9	1	31.9	4	121.5	8	66.6	6	344.8	16
Thadikarankonam ..	Rain gauge damaged.											
Nagercoil	..	..	:3.0	1	1.0	1	:217.2	5	:29.0	3	271.6	14
Seethapal	Rain gauge damaged.											
Balamore	38.0	...	...	...	33.0	2	:56.4	7	:229.6	4	499.1	20

FOR THE YEAR 1981.

Name of the Station.	July.		August.		September.		October.		November.		December.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	178.6	11	303.9	17	361.4	18	591.2	20	276.2	15	22.0	
Kulasekaram	49.0	6	113.0	11	138.6	14	231.7	16	120.2	15	10.8	2
Puthandam	98.8	7	195.3	11	214.4	16	550.4	17	198.1	9	25.2	3
Surulacode	78.0	7	151.5	11	382.2	17	711.8	18	367.9	14	2.3	1
Thadikarankonam ..	Rain gauge damaged.											
Nagercoil	40.0	3	147.1	10	127.4	10	313.5	13	121.7	9	23.5	2
Seethapal	Rain gauge damaged.											
Balamor	116.7	11	207.7	19	375.0	17	471.7	19	119.5	11	..	..

FOR THE YEAR 1982

Name of the Station.	January. RF	January. RD	February. RF	February. RD	March. RF	March. RD	April. RF	April. RD	May. RF	May. RD	June RF	June RD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pechiparai	..	..	..	..	8.1	3	143.3	13	315.9	17	434.1	24
Kulasekaram	..	..	..	..	35.1	4	90.2	10	134.4	10.0	152.0	
Puthandam	..	..	..	..	17.4	4	136.7	10	213.1	14	325.8	219
Surulacode	..	..	..	..	—	..	102.3	7	218.2	11	285.9	210
Thadikarankonam	Rain gauge damaged.											
Nagercoil	..	..	..	..	53.5	2	302.3	12	128.7	7	231.9	16
Seethapal	Rain gauge damaged.											
Balamore	..	..	..	..	..	..	31.8	6	122.0	9	295.0	15

FOR THE YEAR 1982

Name of the Station.	July RF	July RD	August RF	August RD	September RF	September RD	October. RF	October. RD	November. RF	November. RD	December. RF	December. RD
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	249.4	15	83.8	10	29.0	3	286.3	14	340.7	18	2.5	1
Kulasekaram	86.4	10	25.4	5	30.8	4	188.9	16	66.4	10	9.0	1
Puthandam	189.3	14	95.8	7	77.5	4	197.0	12	155.0	14	21.8	2
Surulacode	148.7	13	73.3	7	103.8	7	444.0	23	213.9	19	11.4	1
Thadikarankonam	Rain gauge damaged.											
Nagarkoil	229.0	16	116.9	9	49.1	4	105.8	13	94.1	14	..	..
Seethapal	Rain gauge damaged.											
Balamore	65.0	5	11.9	4	—	—	216.3	17	35.2	4	—	

FOR THE YEAR 1983.

Name of the Station.	January.		February.		March.		April.		May.		June.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pechiparai	..	..	3.5	2	25.0	1	163.2	3	331.7	8	139.2	8
Kulasekaram	..	..	..	..	..	..	13.2	2	47.0	9	70.7	9
Puthandam	..	..	..	..	..	..	16.3	2	258.9	7	175.6	10
Surulacode	..	..	..	..	..	..	4.2	2	299.1	9	142.8	
Thadikarankonam ..	Rain gauge damaged.											
Nagercoil	..	..	..	..	..	..	9.0	1	138.9	5	81.3	5
Seethapal	Rain gauge damaged.											
Balamore	..	..	..	..	..	..	32.8	4	575.3		118.3	

FOR THE YEAR 1983

Name of the Station.	July		August.		September.		October.		November.		December.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	141.6	10	191.7	17	181.4	9	377.8	12	197.7	14	210.0	1
Kulasekaram	33.3	6	62.4	10	145.4	14	82.9	7	106.4	10	110.1	10
Puthandam	76.6..	12	149.2	11	41.6	12	158.5	6	263.3	10	270.7	8
Surulacode	69.7	7	148.7	12	103.5	12	113.9	5	362.6	13	309.5	12
Thadikarankonam ..	Rain gauge damaged.											
Nagercoil	38.0	5	72.0	9	24.0	5	104.0	6	158.0	10	70.0	7
Seethapal	Rain gauge damaged.											
Balamore	175.5	15	94.2	11	190.8	13	111.4	8	248.5	14	113.4	10

FOR THE YEAR 1984.

Name of the Station.	January.		February.		March.		April.		May.		June.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pechiparai	66.5	6	106.5	12	238.2	9	190.2	14	10.0	6	352.1	14
Kulasekaram	46.7	7	53.8	7	83.2	8	96.3	8	17.3	3	67.0	12
Puthandam	49.6	4	97.6	9	148.6	8	206.1	11	22.6	1	165.0	14
Surulacode	7.5	3	74.2	9	136.5	9	225.6	15	—	..	158.8	14
Thadikarankonam	Rain gauge damaged.											
Nagercoil	7.0	2	61.0	5	150.0	7	197.0	8	17.8	1	127.0	12
Seethapal	Rain gauge damaged.											
Balamore	38.0	3	111.3	10	61.0	6	101.4	11	49.4	7	251.5	20

FOR THE YEAR 1984.

Name of the Station.	July		August.		September.		October.		November.		December.	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	215.7	13	9.5	5	262.0	9	431.2	13	171.5	16	..	..
Kulasekaram	111.2	12	9.7	5	293.5	11	391.2	17	87.9	14	1.3	1
Puthandam	57.3	9	8.1	2	115.0	11	167.9	15	58.0	10	..	—
Surulacode	93.1	11	6.2	2	186.1	8	389.1	13	190.9	12	—	—
Thadikarankonam	Rain gauge damaged.											
Nagercoil	50.0	7	5.0	3	78.5	5	178.0	12	95.0	10	2.2	2
Seethapal	Rain gauge damaged.											
Balaoore	120,8	13	48.2	7	167.9	9	392.2	14	94.6	9	39.7	

FOR THE YEAR 1985.

Name of the Station.	January. RF	RD	February. RF	RD	March. RF	RD	April. RF	RD	May. RF	RD	June. RF	RD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pechiparai	214.0	1	6.5	6	49.0	2	175.0	6	61.9	6	579.26	24
Kulasekaram	160.9	5	25.3	1	70.4	2	:97.3	6	151.3	13	330.3	22
Puthendam	65.7	3	12·6	1	27.7	3	14.2	4	94.3	11	122.5	20
Surulacode	129.9	4	10.5	1	13.7	1	68.3	4	395.0	12	389.5	025
Thadikarankonam ..	Rain gaige damaged·											
Nagercoil	59.3	4	35.7	3	62.5	4	13.0	3	45.8	5	182.5	20
Seethapal	Rain gauge damaged.											
Balamore	35.0	4	10.6	1	6.6	2	43.0	3	79.9	8	454.5	25

FOR THE YEAR 1985.

Name of the Station.	July. RF	RD	August. RF	RD	September. RF	RD	October. RF	RD	November. RF	RD	December. RF	RD
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	46.6	5	52.3	4	48.7	6	277.3	13	275.4	12	129.4	6
Kulasekaram	32.4	7	67.1	8	130.6	11	186.4	11	216.5	9	16.6	5
Puthandam	9.1	4	14.1	1	26.3	2	136.2	14	143.5	8	2.5	1
Surulacode	53.4	9	35.6	3	78.3	6	713.1	15	220.3	10	9.1	2
Thadikarankonam ..	Rain gauge d maged.											
Nagercoil	10.3	2	67.0	3	32.0	2	185.0	12	177.0	11	7.0	3
Seethapal	Rain gauge damaged.											
Balamore	62.4	7	83.8	11	269.4	7	296.4	18	110.6	9	44.0	5

FOR THE YEAR 1986.

Name of the Station.	January.		February.		March.		April.		May.		June.	
	RF	RD	RF	RD	RF	RD	RF	RD	RD	RF	RF	RD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
echipara	19.9	2	100.1	9	12.0	1	161.1	12	119.6	5	69.9	8
Kulasekaram	..	..	37.6	4	13.0	2	108.6	9	52.7	7	30.2	8
Puthandam	12.8	4	85.3	6	4.9	2	110.3	10	131.4	7	52.2	9
Surulacode	..	..	124.4	5	22.3	3	65.8	5	41.3	3	25.5	7
Thadikarankonam ..	Rain gauge damaged.											
Nagercoil	8.0	2	48.0	5	14.6	4	57.0	5	38.0	4	41.0	4
Balamore	..	..	48.5	4	..	..	63.7	6	121·9	7	126.2	

FOR THE YEAR 1986.

Name of the Station	July.		August.		September.		October.		November.		December.	
	RF Æ	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Pechiparai	79.9	8	229.6	11	117.9	8	59.6	11	162.5	9	23.5	2
Kulasekaram	22.8	5	95.1	8	49.2	6	99.7	15	49.3	9	4.2	2
Puthandam	60.7	9	202.8	10	87.9	7	317.9	16	89.3	9	10.8	2
Surulacode	45.1	5	215.5	11	55.2	5	477.9	18	122.8	7	22.4	2
Thadikarankonam ..	Rain gauge demaged											
Nagercoil	18.0	3	137.2	9	17.8	5	79.1	9	72·1	8	4.2	2
Balamore	88.4	6	293.9	11	108.6	6	223.1	13	102.4	9	..	..

APPENDIX II.

PARTICULARS OF THE NUMBER OF CATTLE PERMITTED EACH YEAR IN THE FOREST OF KANYAKUMARI DIVISION.

Year	*Cows.*	*Unit.*	*Buffalloes.*	*Cow Unit.*	*Sheeps.*	*Cow Unit.*	*Other animals.*	*Cow Unit.*	*Total. :*	*Incidence cow units per;ha.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1979-80	2,548	2,548	557	1,114	2,358	1,179	—	..	4,841	0.11
1980-81	2,906	2,906	461	922	4,775	2387.5	—	..	6,215.5	0.14
1981-82	2,805	2,805	401	802	3,999	1,999.5	..	..	5,606.5	0.13
1982-83	3,763	3,763	670	1,340	3,313	1,656.5	One elephant.	15	6,774.5	0.17
1983-84 — .. —	3,781	3,781	890	1780	3,672	1.836	Three elephunt.	45	7,442	0.19

APPENDIX III.

PARTICULARS OF CATTLES AND REVENUE REALISED.

Year.	*Grazing revenue.*	*Cows.*	*Unit.*	*Buffalloes.*	*Cow Unit.*	*Sheeps.*	*Cow Unit.*	*Other animals.*	*Cow Unit.*	*Total.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1979-80	12,584.00	2,548	2,548	557	1,114	2,358	1,179	—	—	:4,841
1980-81	12,431.00	2,906	2,906	461	922	4,775	2,387.5	..	—	6,125.5
1981-82 — — —	11,213.00	2,805	2,805	401	802	:3,999	1,999.5	—	—	5606.5
1982-83 .. .. —	13,549.00	3,763	3,763	670	1,340	3,313	1,656.5	One : e lphant. :	15	6,774.5
1983-84	14,884.00	3,781	3,781	890	1,780	3,672	1,836	Three : elephant.	45	7,44

APPENDIX IV.

REVENUE REALISED UNDER MINOR FOREST PRODUCE IN KANYAKUMARI DIVISION FROM 1976 TO 1986.

Year.	Revenue realised.
(1)	(2)
1976-77	1,981.00
1977-78	23,081.80
1978-79	12,436.00
1979-80	32,500.00
1980-81	39,406.00
1981-82	1,65,616.00
1982-83	53,233.00
1983-8	46,326'00
1984-85	78,970.50
1985-86	54,325.00
1986-87	48,372.50

APPENDIX V.

PAST AND CURRENT PRICES.

Rattan —

Serial number.	Name of Range.	Year.	Yield in tonnes.	Revenue.
(1)	(2)	(3)	(4)	(5)
1	Alagiapandipuram	1981-82	36.909	21,600.00
2	Kulasekaram	1982-83	19.950	7,200.00
3	Boothapandi	1983-84	8.00	10,060.00
4	Alagiapandipuram	1984-85	22.170	17,148.00

Bamboo —

Serial number.	Name of Range.	Year.	Yeild.	Revenue.
(1)	(2)	(3)	(4)	(5)
1	Alagiapandipuram	1978-79	3,97,270 Nos.	2,20,001.00
2	Kulasekaram	1979-80	1,274 tonnes.	3,39,001.00
3	Do.	1980.81	2,902 tonnes.	3,48,260.99
4	Alagiapandipuram	1982-83	3,599.999	1,17,730.45
5	Kulasekaram	1983-84	2,465.704	73,971.12
6	Kulasekaram	1984-85	121.21	40,095.00

APPENDIX VI.

LIST OF BUILDINGS IN KANYAKUMARI DIVISION.

Serial number.	Description.	Locality.	Year of construction (or acquired).	Cost of construction (or purchased).	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)
1	Range Office-*cum*-quarters.	Alagiapandipuram ..	1st November 1956.	14,325.00	Acquired on reorganisation of State.
2	Forest Guard Quarters ..	Do. ..	Do.	4,885.00	Do.
3	Forest Watch Station ..	Thadikarankonam ..	1951-52	200.00	.. ..
4	Forest Watch Station ..	Aralvaimozhy	1st November 1956.	7,056.00	Acquired on reorganisation
5	Old Mahendragiri Range Office.	Do. ..	Do.	17,008.00	Do.
6	Lac shed	Thadikarankonam ..	1961-62	2,970.00	.. ..
7	Mazdoor Line	Valayuthuvayal ..	1962-63	4,748.00	.. ..
8	Foresters quarters ..	Thadikarankonam ..	1964-65	5,851.03	.. ..
9	Do. ..	Alagiapandipuram ..	1965-66	5,370.70	.. ..
10	Lorry shed	Do. ..	1966-67	964.88	.. ..
11	Mazdoor Line	Do. ..	1970-71	8,113.45	.. ..
12	Muthukuzhi palace ..	Veerapuli F.R.	Not known.	5,000.00	Dismantled during 1967-68.
13	Range Officers Quarters ..	Kulasekaram	9th December 1969	18,931.00	Transferred from P.W.D.
14	Watch station	Do. ..	1st November 1956.	1,300.00	Acquired on reorganisation of States.
15	Do. ..	Mecode	1st November 1956.	730.00	Do.
16	Guards quarters	Ponmanai	1st November 1956.	680.00	Do.
17	Watch Station	Kalial	1st November 1956.	622.00	Do.
18	Watch Station	Pechiparai Mothiramalai Road.	1964-65	840.00	.. ..
19	Foresters quarters	Kulasekaram ..	1962-63 to 1963-64	8,082.00	.. ..
20	Combined Forest Guard and Watchers Quarters.	Chinnakadethukam ..	1965-66	7,385.39	.. ..
21	Watch Station	Upper Kodayar ..	1965-66	1,632.32	.. ..
22	Watch Station ..	Lower Kodayar ..	1965-66	1,748.93	.. ..
23	Seeds store room	Kulasekaram	1966-67	2,165.00	.. ..
24	Lorry shed	Do. ..	Do.	489.00	.. ..

(1)	(2)	(3)	(4)	(5)	(6)
25	Mazdoor Line	Pechiparai	1970-71	9,735.66	....
26	Range Office	Kulasekaram	9th December 1959.	8,541.00	Acquired in P.W.D. Dismantled in 1966.
27	Watch shed	Do. ..	9th December 1959	1,248.00	Acquired in P.W.D. Dismantled in 1964-65.
28	Sub-line	Do. ..	9th December 1959.	5,107.00	Acquired in P.W.D. Dismantled in 1965-66
29	Depot Range Office-*cum*-quarters.	Nagercoil	1st November 1956.	7,400.72	Aqcuired in reorganisation or states.
30	Depot Watchre's quarters.	Do. ..	1st November 1956.	4,812.00	Do.
31	Tally shed	Do. ..	1st November 1956.	7,610.79	Do.
32	Combined quarters For Forest-Guards and Watchers.	Thandikarankonam.	1981-82 ..	53,672.00	....
33	Junior Assistant's Quarters	Kulasekaram	1984-85	41,395.00	....
34	Foresters Quarters ...	Kalial	1984-85	43,475.00	....
35	Forest-Guard Quarters ...	Pechiparai	1984-85	38,293.00	....
36	Forest-Guard and Watcher quarters.	Pechiparai	1984-85	53,840.00	....
37	District Forest Officer quarters.	Vadasery Depot compound.	1984-85.	....	....

APPENDIX-VII.

LIST OF ROADS IN KANYAKUMARI FOREST DIVISION.

Serial number and name of range.	*Name of Road.*	*Date of construction.*	*Capitals cost.*	*Length within the RF.*	*Width.*	*Mettalleds or not.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Alagiapandipuram	Aasmbu District Trace	Not known	Not known	30.69 km.	6 feet.	Not mettalled
2 Do.	Muthukuzhimlani Traces	Not known transferred froms Travancore State.	Do.	17.20 km.	6 feet	Do.
3 Do.	Ulakurani Trace	Do.	Do.	0.81 km.	6 feet	Do.
4 Depot Office Nagercoil.	Road in the Timber Depot in Nagercoil.	Do.	Do.	0.00 4km.	10 feet	Mettalled
5 Kulasekaram	Pem to Vallakadu road	Existing road	Do.	640 Mts.	..	..
6 Do.	Chemmankode to Ela road.	Do.	Do.	—	..	..

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
7	Do.	Extractor Road to Thodalikadu.	Do.	Do.	..	..	..
8	Do.	Chemmankode to Killiknoor road.	Do.	Do.	..	..	..
9	Do.	Thodalikadu to Chittar road.	Do.	Do.	..	..	..
10	Do.	Valia Ela road through Klamalai R.F.	Do.	Do.	..	..	..
11	Boothapandi	Velimalai Inspection path.	Do.	Do.	..	..	..
12	Do.	Semparai—Juntral Mutyusolai.	Do.	Do.	..	..	..

APPENDIX-VIII

	Serial number and description.	*Year of construction (or) purchase.*	*Cost of construction (or) purchase.*	*Remarks.*
	(1)	(2)	(3)	(4)
1	Well attached to the Range Office compound at Aramboly.	1st October 1956	1,500.00	Transferred from Ex Travancore Cochin State.
2	Well attached to the Range Office at Alagiapandipuram.	Do.	2,006.98	Do.
3	Well at Nagercoil Timber Depot compound ..	Do.	..	Do.
4	Well at Range Officers Quarters at Kulasekaram ..	Do.	1,500.00	Do.
5	Well attached to Mecode Watch Station ..	Do.	250.00	Do.
6	Well attached to Forester Quarters at Kulasekaram	9th December 1959	200.00	Transferred from P.W.D.
7	Well attached to Watch Station at Kulasekaram ..	1961—62	480.00	— —

APPENDIX-IX.

BOTANICAL LIST OF IMPORTANT PLANTS IN KANYAKUMARI FOREST DIVISION.

Botanical name.	*Tamil name.*	
(1)	(2)	(3)
Bbrus precatorisu	Kundumani	Common
Acacia nilotica Syn. A. arabica ..	Karuvelam	Do.
Acacia concinna	Seyakkai	Occassional
Acacia ferriugnca	Parambai	Do.
Acacia intsia	Indi or Incha ..	Common
Acacia latronum	Koka odai	Do.
Acacia leucophloea	Velvelan	Occassional
Acacia pannata	Vellai indu	Do.
Acacia planifrons	Odai	Common
Acacia chundra Syn. A. sundra ..	Karungali	Do.
Acrocarpus frazinifollus	Malankonal or Malaveppu.	Rare
Actinodaphne hookeri	Thali	Do.
Adina cordifolia	Manjakadambai ..	Common
Aegla marzelos	Vilvam	Do.
Aglaia courtallensis	Veguia chokia ..	Do.
Aglafa roxburghiana	Chokla	Occassional
Agrostistachya indica	Monecharai	Common
Agrostistachya longifolia	Manikulikkai ..	Do.
Ailanthus excelsa	Peemaram	Do.
Ailanthus melabarica	Mattipal	Do.
Alangium salvifolium Syn. A. lamarckil	Allinji	Do.
Albizzia amara	Usil	Do.
Albizzia lebbeck	Vagai	Do.
Albizzia falcata		Do.
Albizzia odoratissima	Selvavagai or Chithalovagai.	Do.
Albizzia procera	Velvagai	Occassional
Albizzia stipulate	Hir usil or Pulivagai	Common
Alphonea zeylanica		Occassional
Alstonia scholaris	Ezhilaipalai	Common

Amoora canarans	Karagil	Rare
Amoora rohituka	Vengal..	Rare
Anacardium occidentala	Kollama or Munthiri	Common
Anacolosa densiflora	Kalmanikkam ..	Rare
Anogeissus larifolia	Vekkali	Common
Anthocsphalus cadamba	Kola niyila or Vellakkadambu.	Occassional
Antiaris toxicaria	Maravuri	Do.
Aporesa lindleyana	Nirvettai	Do.
Arenga wighti	Alampaael	Do.
Stidyifs frptrdds	Oosipullu	Common
Artocarpus hirsuta	Aiyai pila	Do.
Artocarpus heterophyllus Syn. A. integrifolia	Pila	Do.
Arundo donax	Nanalpillu	Do.
Arundinaria wightiana		Occassional
Asparagus racemosus	Kattuvarai	Do.
Atalantica monophylla..	Kattr elimichai ..	Do.
Asadirachta indica	Vembu	Common
Bacqurea courtallensis	Thonthe	Occassional
Balamocarpus utilis	anukrongu	Do.
Bambusa bambos Syn. B. arundinacea	Moongil	Common
Bassia longifolia	Kattuilluppai ..	Common
Bauhinia malabarica	Velathi	Do.
Bauhinia racemosa	Athi	Do.
Bauhinia tomentosa	Athi	Occassional
Bauhinia vehlii	Kattumandarai ..	Do.
Beilschmiedia bourdilloni		Do.
Bentinckia coddapanna	Konthapanol ..	Do.
Bischofia javanica	Milachedayam ..	Do.
Bombax insignis	Kaliavu	Do.
Bombax ceiba Syn. Salmalie malabarnca Syn. Bombax malabaricum		
Butea frondosn	Elaporasu	Common
Cadaba trifoliata	Purna	Do

(1)	(2)	(3)
Casesalpinia sappan	Sappangu	Common
Calemus rotang	Perambu	Do.
Calemus travencorieus	Maniperambu ..	Do.
Calophyllus elatum	Pinnai	Do.
Calophyllum inophyllum	Pungamkottai ..	Do.
Calophyilum trapetifolum	Cherupinnai	Occassional
Calotropis gigantea	Sukkalai	Common
Caraium strictum	Karunkuthirikam ..	Do.
Canthium didynum	Sulunthu	Do.
Canthium parviflorum	Sengarai	Do.
Capparis horride	Adondai z	Do.
Carallia integerrima	Andimirian	Occassional
Careya arborea	Ayma	Common
Carissa carandas	Kalakkai	Do.
Caryata ureas	Koondapanai ..	Do.
Casearia tomentosa		Occassional
Cessia auriculatea	Avaram	Common
Cassia fistula	Konnai	Do.
Cassia montana	Kunnavaram	Do.
Cessia siamea	Manjakoonai ..	Do.
Casvarina equisatifola	Savukku	Do.
Ceiba pentandra Syn. Eridoendron anfractuosum	Illavam	Do.
Celtis wightii	Vellaithoovarai ..	Rare
Chloroxylon swietenia	Valimar or Porasu ..	Common
Chukrasis tabularis	Madagiri vembu ..	Occassional
Cenehrus ciliaris	Kollukattaipul ..	Do.
Cinmamomum zeylanicum	Lavanagam	Do.
Clausena indica	Nare	Do.
Clausena wildemvoil	Kattu veppillai ..	Do.
Clerodendrum infortunatum	Vattakanni	Common
Cleistantgus collijus	Odagu	Do.
Cochlospermum religiosum .. .. Syn. C. gosaypium	Thanaku	Occassional
Cocos nucifera	Thennai	Common

(1)	(2)	(3)
Combretum ovalifolium	Odankudi	Rares
Commiphora berryi Syn. Balsamodendrom berryi	Mulkiluvai	Common
Commiphora caudats Syn. Protium candatum		Do.
Cordia dichotoma Syn. C. myxe	Virusham	Occassiona
Crataeva religiosa	Mavalingam	Occassionals
Croton malabaricus	Thavattupulavu	Do.
Cullenia excelsa	Vedipilas	Common
Curcuma angistifolia	Kattukovai	Do.
Cymbopogon species	Vasanipullu	Do.
Cypres pangarai	Koraipul	Do.
Dalbergia latifolia	Thothagathi	Do.
Dalbergia multiflora	Viruvetta	Do.
Dalbergia paniculatas	Adukkuvagai	Do.
Dalbergia sisso Delonix elata Syn. Poniciana elata	Vadamadaki	Occassional
Dendroocalamus strictus	Moongil	Common
Derris scandens	Punali	Occassionals
Dichopsis elliptica	Pallodi or Palvadinjan.	Common
Dichrpstachys cinerea	Vadathalai	Do.
Dillenia pentagyna	Nai Thekku	Do.
Diospyros assimilis	Karunthalu	Occassional
Diospyros bourdilloni	Karunthovarai	Do.
Diospyros embrycteris	Panichi	Do.
Diospyros foliosa	Vella thovarai	Do.
Diospyros insignis	Do.	Do.
Diospyros microphylla	Chinna thovarai	Do.
Diospyros montana	Vakkanai	Common
Diospyros orixensis	Vella thovarai	Occassionals
Dipterocarpus hourdilloni	Karangi	Do.
Dodonsea viscosa	Virali	Common
Dolichandrone falcata	Pamadri	Do.
Dysoxylum malbaricum	Vellagil	Occassional

Botanical name.	*Tamil name.*	
Dysoxylum beddomi	Chinngil	Gccassional
Ehretia laevis	Nariveli	Do.
Elaeocarpus oblongus	Athankottai	Do.
Elaceocarpus serratus	Olandkarai	Do.
Elaeocarpus tuberculatus	Ruthraksham ..	Do.
Elaedendron glaucum	K.trei	Do.
Elettaria cardamomum	Elakka	Do.
Emblic officinalis	Nellikkai	Commons
Entada scandens	Tellukoi	Do.
Erythrina variegata Syn. E. indica	Mullumarukku ..	Do.
Erythroxylon monosynum	Shemmanthi	Do.
Eugenia caryophyllata	Kirambu	Rare.
Eugenia gardeneri	Nirnavel	Occasional.
Eugenia laeta		Rare.
Eugenia Munranii		Do.
Eugenia pimento		Do.
Eugenia zeylanica		Do.
Eupatorium glandulosum		Common.
Euphorbia tirucalli	Tirukkalli	Do.
Euphoria longana Syn. E. roxburghiana.	Kattuchampakam or Kambli.	Rare.
Pernonia elephantus	Vilamaram	Occasional.
Ficus asperrima	Iramparathan ..	Do.
Ficus benghalensis	Alamaram	Do.
Ficus religiosa	Arasamaram	Do.
Fillicum decipens	Athadali	Do.
Flacourtia sepiaria	Kodikarai	Do.
Gareinia cambogia	Kodapuli	Do.
Garcinia echinocarpa		Do.
Garcinia morella	Makki ..	Do.
Givotia retteriformis	Kottai thanaku ..	Do.
Gluta travancoria	Senkurunchi	Do.
Glycosmis pentaphylla	Kulapanai	Common.
Gm[illegible]a arborea	Kumil	Occasional.
Gmelina asiatica	Kumil	Do.

Gnetum acandens	Anapendu	Rare.
Gordonia obtusa		Do.
Grewia hirsuta	Kalunnu	Occasional.
Grewia asiatica	Palica	Do.
Greqia galbra Syn. G. laevigata	Unnu	Do.
Grewia tiliaefolia	Thadasu	Common.
Grevillea robusta	Kathadi	Do.
Gyrocarpus jacquini	Thanukku	Do.
Hardwickia binata	Acha	Occasional.
Hardwickia pinnata	Kolavu	Do.
Harpullis cupanioides		Ra e,
Hamidesmus indicus	Nannari	Rare.
Helecteres isora	Valampuri	Common.
Hemicyclia venusta	Vel elumbu	Do.
Hemigyrosa deficiens		
Heritiera papilio	Sadanangu	Do.
Botanical name.	*Tamil name.*	
Hippecratea indica	Morusarakodi	Occasional.
Holarrhena antidysentrica	Kodagupala	Common.
Holigarna arnottiana	Kattutherai	Occasional.
Holoptelia integrifolia	Avi	Common.
Hopea parviflora	Kongu	Do.
Homalium zeylanicum		Rare.
Hydnocarpus alpina	Maravetti	Occasional.
Hydnocarpus laurifolia Syn. H. wightiana.	Do.	Do.
Hymenodictyon excelsusm	Naikadambu	Do.
Ichanocarpus frutescens	Oothalkodi	Common.
Indigofera species		Occasional.
Ipomea digitata	Vallikilangu	Do.
Ipomea biloba		Do.
Impatiens species		Do.
Ixora arborea Syn. I. parviflora	Sulundu	Common.
Jasminum humile	Kattumalli	Do.
Jatropha curcas	Kattamanak	Do.

Kydis calycina	Vendai	Occasional.
Lagerstroemia flosreginae	Poomaruthu	Do.
Lagerstroemia lanceolata	Venteak	Common.
Lannea coromandelica Syn. L. grandis	Oothiam	Do.
Lansium anamallayanum	Santhanaviri	Occasional.
Lantana Camara	Arippu	Common.
Laportea crenulata	Anaichorian	Occasional.
Leea sambucina	Nekku	Do.
Lepis-anthestoraphylla	Nackcta:	Rare.
Leucanes glauca	Thumbai	Occasional.
Limonia acidessima	Kattuelumichai ..	Do.
Linociera malabarica	Porumbolu	Do.
Litsea stocksii		Do.
Litsea seylanica	Shenbagapalai ..	Do.
Liphopetalum wightianum	Venkottai	Do.
Loranthus	Ethukanni	Common.
Maba buxifolia	Irambali	Do.
Macaranga roxburghii	Vattakanni	Do.
Machilus macranths	Kolamavu	Do.
[illegible]aranga roxburghii	Vattakanni	Common.
Machilus macranths	Kolamavu	Do.
Mallotus philippinensis	Thavattai	Do.
Madhuca latifolia Syn. Bassia latifolia	Illuppai	Do.
Memecylong gracile	Veikasa	Occasional.
Mesua ferrea	Sangu	Occasional.
Michelia champaca	Champakam ..	Do.
Miliusa roxburghiana		Do.
Mimosa pudica	Thottachurungai ..	Common.
Mimusops elengi	Maglam	Occasional.
Mimusops hexandra	Olankapalai	Do.
Mitrephora heynecana		Rare.
Morinda tinctoria	Manjanathi	Common.
Moringa oleifera .. .. .. Syn. M. ptroygosperma.	Kattu Murungai ..	Occasional

Botanical name.	*Tamil name.*	
Mudulea sericeas Syn. M. suberosa	Pulluvaram	Common.
Murraya paniculata Syn. M. exotica.	Karuveppilai	Occasional.
Mussenda frondosa		Do.
Myristica attennuata	Kattujathika	Do.
Myristica beddimei Syn. M. leurifolia.	Do.	Do.
Myristica malubarica s	Do.	Do.
Mothopegis colebrookiana	Sorapalai	Common.
Ochlandra brundisii	Etta	Do.
Ochlandra rheedi	Do.	Do.
Ochlandra travancorica	Do.	Do.
Pandanus tectorius	Thalai	Common.
Pavetta indica	Pavetta	Do.
Perotis indica	Narivalpullu	Do.
Phonix farinifera	Eacham	Do.
Phoenix sylvestris	Do.	Do.
Pinanga dicksonii	Kana kamugu	Occasional.
Piper nigrum	Milagus	Common.
Piper subpeltatum	Do.	Do.
Pithecolobium dulce	Kodukkapuli	Do.
Plectronia didyma	Irembarathan	Occasional.
Plumeria rubras Syn. P. acutifolia.	Kallimandarai	Do.
Podocarpus latifolia	Narambolı	Do.
Poecilon neuron indicum	Volia, Puthangali	Rare.
Polythia cerasoides	Nedunar	Occasional.
Polyalthia fragrans	Do.	Do.
Polyalthia longifolia	Netilingam	Do.
Pongamia pinnata Syn. P. glabra.	Pungam	Common.
Premna tomentosa	Kollukattai takku	Do.
Prosopis juliflora		Do.
Prosopis spicigera	Parambai	Do.
Pterocarpus marsupium	Vengai	Do.
Pterocarp sanustalinus	Ratnachandanan	Occasional.

Botanical name.	*Tamil name.*	
Ptrolobium indicum	Karindu	Common.
Prero spermum occrifolium	Thadayamaram	Occasional.
Pterospermum glabrescens		Do.
Pterospermum rubiginosums	Chithalaipolavu	Do.
Putranjiva roxburghii	Karupalai	Rare.
Pygeum wightianum	Attanarikongu	Do.
Purarea species		Common.
Randia dumetorium	Karai	Do.
Rauwolfia serpentina	Avalpuri	Occasional.
Samanea saman Syn. Pithecellobium saman.	Thungumoonjimram	Common.
Samseviora seylanica	Marul	Occasional.
Santalum album	Sandanam	Do.
Sapindus emarginatus	Neikottai	Do.
Sapindus laurifolius		Do.
Schleichera oleosa Syn. S. trijuga.	Poovam	Common.
Semecarpus anacardium	Sherankottai	Occasional.
Side rhombifolia	Karuthativeru	Do.
Sclanum phaescens	Sundaikai	Common.
Saptholobus	Pellachi	Do.
Spondias pinnata Syn. S. Nangifera.	Ambalam	Occasional.
Stephegyne parvifolia	Nirkadambu	Do.
Sterculia alata	Anaithondi	Common.
Sterculia guttata	Thondi	Occasional.
Sterculia urens	Senthanuku	Do.
Sterculia villosa	Maruthan	Do.
Stereospermum personatum Syn. S. chelonoides.	Poompadiri	Common.
Sterblus asper	Pira	Do.
Strobilanthes species	Kurinji	Do.
Strychnos nuxvomica	Etti	Do.
Strychnos potatorum	Thethankottai	Occasional.
Syzygium cumini Syn. Eugenia jambolana.	Naval	Common.
Swietenia marcrophylla		Occasional.
Symplocos spicatp	Kamblivetti	Do.

Botanical Name.	*Tamil name.*	
Tamarindus indica	Puli	Common.
Tectona grandis	Tekku	Do.
Terminalia arjua s	Kolamarudu Nirmarudu	Do.
Terminalia bellerica	Thani	Do.
Terminalia chebula	Kadukkai	Do.
Terminalia paniculata	Maruthu	Do.
Terminalia travancoransis	Peikadukka.	Occasional.
Terminalia tomentosa	Karimarudhu	Common.
Tetrameles nudiflora	Chini	Occasional.
Thespesia populnea	Poovarasu	Common.
Toddalia asiatica	Kattumulagu	Rare.
Toona ciliata : Syn. Cedrela toona.	Santhana vembu	Common.
inospora cordifolia	Sinthil	Occasional.
Trema orientalis	Amparuthi	Common.
Trewia nudflora	Nayikumil	Occasional.
Vateria indica	Vellaikundrikam Vella pinnai.	Do.
Ventilagu maderaspatana	Vembadam	Common.
Vernonesa arborea	Seithi	Occasional.
Vitex altissima	Mylai	Commom.
Vitex negundo	Nochi	Do.
Vitis quadrangularis	Perandai	Do.
Walsura picida	Valsura	Common.
Webera coeymbosa	Papatan	Occasional.
Wandlandia notoniana	Thevarai	Do.
Woodfordia floribunda		Do.
Wrightia tinctoria	Palai	Common.
Xanthephyllum flavescens	Narathei	Occasional.
Xylis xylocarpa	Irul	Do.
Zanthoxylum rhotsa	Kattumurukku	Do.
Zizyphus mauritiana Syn. X. jujuba.	Elandai	Common.
Zizyphus ocenoplin	Kottai	Do.
Zyzyphus trihervia	Karukattan	Occasional.
Zizyphus eylopyrus	Kottai	Do.
Zingiber cassumunar	Kattumanjal	Common.

APPENDIX X

LIST OF LOCAL NAMES.

Tamil Name. (1)	*Botanical Name.* (2)
Adondai	Capparis horrida
Athadali	Filicum decipens
Anapondu	Gnetum scandens
Anaithondi	Sterculia alata
Avalpuri	Ranwolfia serpentina
Chini	Tetremelesnudiflora
Elaporasa	Butea frondosa
Erukkalai	Calotropis gigantea
Ethukanni	Loranthus
Irul	Xylia xylocarpa
Karuvelam	Acacia nilotica Syn. A. abica
Kattuvarai	Asparagus racemosus
Kattuelimicha	Atalantia monophylla
Kattumandarai	Bauhinis vahlii
Kalilavu	Bombax insignis
Koonavaram	Cassia montana
Kollukottaipul	Cenchrus ciliaris
Kottaukorrai	Curcuma angustifolia
Koraipul	Cypres pangarai
Karunthalu	Diospyros assimilis
Kirambu	Eugenia caryophyllata
Kattuchanpakan or Kambli	Evodia-lunu-ankenda Syn. E. roxburghiana
Kodikarai	Flacourtis sepiaria
Kottampuli	Carcinia cambogia
Kottai	Givotia rott eritolmis
Kathadi	Grevillca robesta
Kadugupala	Holarrena antidysentrica
Kattumalli	Jasminum humile
Kattamanak	Jatrophs curcas
Karuveppilai	Murraya paniculata Syn. M. exotica
Kattujathika	Myristica attenuata
Kodukkapuli	Pithocolobium dulce

Tamil name.	*Botanical name.*
Karupalai	Putranjiva roxburghii
Karuthattuveri	Sida rhombifolia
Kamblivetti	Symploos spicatca
Kattumanjal	Zingiber cassuunar
Mancharai	Agrostistachys indica
Mulvengai	Bridelia retusa
Maniperambu	Calamus travancorious
Milagu	Pipe nigrum
Maruthan	Sterculia villosa
Maruthu	Terminalia paniculata
Nanalpilu	Arundo donax
Nana	Clausena indica
Nannari	Hemidesmus indicus
Naikadambu	Hymenodictyon excelsum
Nekku	Leea sambucina
Nekota	Lepis-anthesteraphylla
Naramboli	Podecarpus latifolia
Narivalpallu	Perotis indica
Nirmardu	Terminalia arjuna
Naikumil	Trewia nudiflora
Noohi	Vitex negundo
Oosipullu	Aristida depressa
Odugu	Cleistanthus collinus
Oothalkodi	Ichnocarpus frutescens
Oothiam	Lennea coromandelica Syn. L. grandis.
Purne	Cadaba trifoliata
Punali	Derris scandens
Palica	Grewia asintica
Poomarudu	Lagerstroemia floareginae
Porambalu	Linociear malabarica
Pilachi	Spatholobus
Peikakukk	Terminalia travancorensis
Poovarasu	Thespesia populnea
Perandai	Vitis quadrangularis

Tabil Nadu	Botanical Name
Papatan	Webera corymbosa
Palai	Wrightia tinctoria
Rathachendanam	Pterocarpus Santalinus
Sappangu	Caesalpinia sappan
Sulundu	Canthium didymum
Snakarai	Canthium parviflorum
Savukku	Casuarina equisetifolia
Santhanavembu	Toona ciliata Syn. Cedrela toona
Sanantha viri	Lansium anamallayanum
Shenbagapalai	Litsea zeylanica
Sundaika	Solanum pubescens
Senthanaku	Sterculia vrens
Senthil	Tinospera cordifolia
Seithi	Vernonea arborea
Thali	Actionodaphns hookeri
Tellukai	Entada scandens
Thadasu	Grewia tiliaefolia
Thavattai	Mallotus philippinensis
Thumbai	Leucanea glanca
Thottachurungi	Mimosa pudica
Thoongu moonji	Samanea saman Syn. Pithecellotium saman
Thadayamaram	Pteroapermum acerifolium
Thevarai	Wendandia notoniana
Velvagai	Albizzia procera
Vengal	Amoora rohituka
Vattakanni	Clerodendrum infortunatum
Vasanipullu	Cymbopogen species
Velelumbu	Hemieyclia venusta
Vallikilangu	Ipomea digitata
Vendai	Kydia celycina
Venteak	Lagerstroemia lanceolata
Venkottai	Lophepetalum iwghtiannj
Veikasa	Memacylong gracile :
Velia	Poecilon neuron indicum

Vadamadaki .. .. Delonix elata Syn. Polinciana elata

Valsura .. .. Walsura picida.

APPENDIX XI.

LIST OF RESERVED LANDS UNDER SECTION 26.

Name of Block.	*Survey Number.*	*Village.*	*Area in hectare.*	*Total area in hectar.*
(1)	(2)	(3)	(4)	(5)
Kottakarai North Block	23	Aralvai Mozhi ..	3.25.2	4.15.5
	24	Do.	0.90.0	
Kottakarai Central Block-I ..	246-1	Do.	0.46.0	4.19.0
	262-1	Do.	0.30.0	
Central Block - II ..	245-p	Do.	0.25.0	
	224	Do.	1.16.5	
	223	Do.	2.01.5	
Kottakarai South Block	809	Thovalai ..	1.44.0	8.78.55
	818	Do.	1.70.0	
	819	Do.	1.47.5	
	824	Do.	1.01.0	
	835	Do.	1.60.0	
	834	Do.	0.52.0	
	833	Do.	0.73.5	
Thadikarankonam Block	39	Arumanallur ..	4.56.5	4.565
		Total ..	21.69.5	21.69.5

APPENDIX XII.

LIST OF RESERVED FOREST AND ITS NOTIFICATION IN KANYAKUMARI FOREST DIVISION.

Serial number. (1)	*Name of R. F.* (2)	*Extent in hectares.* (3)	*Government Notification.* (4)
1	Therkumalai East ..	1,187.00	Under section 18 of the Forest Regulation II of 1068 published in Travancor Government Gazette No. 50, dated 15th December 1902.
2	Therkumalai West ..	907.00	Under section 18 of the Forest Regulation II of 1608 as amended by Regulation IV of 1071 and IV of 1085, dated 15th August 1911.
3	Thadagamalai ..	675.00	Under section 18 of Forest Regulation II of 1608 as amended by Regulation IV of 1071 and 1085, dated 20th February 1912.
4	Poigaimalai	775.00	Government Notification published in page 703 of Government Gazette No. 16 dated 6th October 1903.
5	Mahendragiri ..	4,311.00	Government Notification published in the Government Gazette No. 40, dated 29th September 1902.
6	Velimalai	1,282.00	Under section 18 of the Forest Regulation II of 1068 as amended by Regulation IV of 1071 and IV of 1085, dated 18th July 1920.
7	Veerapuli	25,012.00	Under section 18 of the Forest Regulation II of 1068 in the Government Gazette dated 17th July 1903. Subsequently Government Notification published in page No. 793 of Government Gazette No. 40, dated 6th October 1903.
8	Pechiparai Block A ..	26.00 33.00	Under section 18 of the Forest Regulation II of 1068 as amended by Regulation IV of 1071 and IV of 1085, dated 3rd August 1921
9	Kalkulam Block I .. Block II	39.00 44.00	Under section 18 of the Forest Regulation II of 1068 as amended by Regulation IV of 1071, IX of 1085, IV of 1089 and VIII of 1097, dated 29th April 1939 and 11th August 1939.
10	Klamalai	6,216.00	Under section 18 of the Forest Regulation II of 1068 as amended by Regulation IV of 1071 and IV of 1085, dated 26th January 1929.
11	Asambu	5,116.57	Published at page 408 of the Government Gazette, dated 7th April 1908 under section 6 of the Travancore Forest Regulation II of 1068.
12	Thodalikadu .. .. (Klamalai extension)	154.00	Under section 18 of the Forest Regulation II of 1068 as amended by Regulation V of 1071 and IX of 1035.
		45,777.57	

YIELD AND REVENUE OBTAINED IN ETTA REEDS IN KANYAKUMARI FOREST DIVISION.

APPENDIX XIII.

Serial number.	*Year.*	*Yield in tonnes.*	*Revenue Rs.*	*Person to whom lease has been granted.*
(1)	(2)	(3)	(4)	(5)
1	1974-75	1,568.750	9,412.50	The Sun Paper Mills Limited, Cheranmahadevi.
2	1975-76	1,137.055	7,622.23	Do.
3	1976-77	1,827.435	29,575.19	Do.
4	1977-78	..	..	....
5	1978-79	..	..	....
6	1979-80	171.45	6,172.38	The Sun Paper Mills Limited, Cheranmahadevi.
7	1980-81	1,057.355	38,075.38	Do.
8	1981-82	1,049.750	41,994.67	Do.
9	1982-83	524.705	30,992.45	Do.
10	1983-84	851.950	42,597.50	Do.
11	1894-85	1,798.740	90,342.00	Do.
12	1985-86	1,454.840	88,151.25	Do.
13	1986-87	896.240	75,284.15	Do.

APPENDIX

STATEMENT SHOWING THE REMOVAL OF ETTA REEDS BY

Month.	1980-81		1981-82		1982-83	
	Quantity in tonnes.	*Value in Rs.*	*Quantity in tonnes.*	*Value in Rs.*	*Quantity in tonnes.*	*Value in Rs.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
April	..	..	..	..	..	..
May	..	..	..	..	9.325	432.30
June	..	..	6,640	2,66.00	11.630	511.72
July	..	..	7.836	313.40	10.935	481.15
August	..	..	8.500	340.00	12.900	557.60
September	..	..	7.300	288.00	5.500	242.00
October	..	..	7.140	386.00	13.820	608.08
November	3.480	126.00	12.165	486.60	8.375	368.50
December	9.940	358.00	14.445	577.80	15.660	689.05
January	11.870	427.50	7.425	289.80	8.150	358.60
February	..	..	11.640	461.60	9.885	434.95
March	11.095	399.42	18.340	733.60	12.860	656.83
Total ..	36.385	1,310.92	101.50	4,042.80	119.540	5,259.80

XIV.

M.S. SRIKUMARI HANDICRAFTS STORES FROM KANYAKUMARI FOREST DIVISION.

1983-84.		1984-85		1985-86		1986-87	
Qty. in tonnes.	*Value in Rs.*	*Qty. in tonnes.*	*Value in Rs.*	*Qty. in tonnes.*	*Value in Rs.*	*Qty. in tonnes.*	*Value in Rs.*
(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
..	..	13.675	683.75	..	..	..	..
..	..	9.895	494.75	..	..	..	..
..	—	9.660	483.00	6.570	328.00	—	..
12,380	544.82	8.825	441.25	11.760	588.00	—	..
13.900	611.60	12.955	647.75	6.980	349.00	..	..
16.770	737.88	4.045	202.25	7.670	383.50	—	—
7,240	318.56	13.305	665.25	5.720	286.00	11.968	10,053.60
13.255	583.20	7.515	375.75	7.340	367.00	..	..
20.835	916.75	8.510	325.50	18.730	936.50	..	..
13.680	575.82	12.945	647.25	7.305	366.25	..	..
14.725	647.90	7.365	368.25	15.796	789.75	..	..
7.355	323.65	13.130	656.50	26.720	133.00	..	..
1,19.540	5,269.78	119.825	5 991.25	119.490	5,974.50	119.680	10,053.60

APPENDIX XV

STATEMENT SHOWING THE SALE OF BAMBOO COUPES IN KANYAKUMARI DIVISION.

Serial number and Name of Range.	*Person to whom lease has been granted.*	*Year*	*Yield*	*Revenue*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1. Alagaipandipuram	Thiru M.P.V. Ayyanar Raja, Rajapalayam.	1978-79	3,97,270 Nos.	2,20,001.00	..
2. Kulasekaram	Do.	1979-80	1,274 tonnes.	3,39,001.00	..
3. Kulasekaram	Do.	1980-81	2,902 tonnes	3,48,260.99	..
4. Algaiapandipuram	Seshasayee Paper Boards Ltd., Pallipalayam.	1982-83	35,99.999	1,17,730.45	..
5. Kulasekaram	Do.	1983-84	24,65.704	73,971.12	..
6. Kulasekaram	Fisherman Co-operative Society, Kanyakumari	1984-85	12,121	40,095.00	..
7. No sale during 1985-86 ..					
8. No sale during 1986-87.					

APPENDIX XVI

STATEMENT SHOWING THE REVENUE AND EXPENDITURE IN KANYAKUMARI FOREST DIVISION.

Serial number and year	*Revenue*	*Expenditure*	*Surplus*	*Deficit*
1 1977-78	58,80,085.79	..	..	..
2 1978-79	66,82,579.48	9,88,550.07	56,94,029.41	..
3 1979-80	61,38,711.04	..	..	..
4 1980-81	98,94,886.15	23,31,282.18	76,63,583.97	..
5 1981-82	36,02,553.18	23,97,248.65	12,05,304.53	..
6 1982-83	18,73,267.46	17,49,702.71	1,23,564.76	..
7 1983-84	35,05,031.81	21,96,125.80	13,08,906.01	..
8 1984-85	1,29,85,365.05	20,42,454.12	1,09,42,910.93	..
9 1985-86	1,21,62,610.25	23,33,222,05	88,29,388.20	..
10 1986-87	34 04,069.70	21,22,578.40	12,81,491.30	..
Total	7,11,79,139.96	1,61,61,163.98	3,70,49,179.20	..

CONTROL—FORM No. I

CONTROL FORM—TEAK WORKING CIRCLE—RECORD OF THINNINGS

Prescribed.			Done.			Yield.				Revenue realised.	Remarks.
Year	Plantations to be thinned.	Area	Year.	Plantations thinned.	Stones removed.	Timber.		Poles.			
							TP:.	IPM.	TPs.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

FORM No. 11-A.

Control Form—Soft wood Working Circle—Record of Felling.

Prescribed.			Done.					
Year.	Coups number of Plantations.	Area.	Year.	Coupe number of plantations.	Area.	Yield.	Revenue realised.	Remarks.
(1)	(32)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

FORM No. II-B.

Control Form—Soft Wood Working Circle—Record of Thinning.

Prescribed.			Done.			Yield.	Revenue realised.	Remarks.
Year.	Plantation to be thinned.	Area.	Area.	Plantation thinned.	Stone removed			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

FORM No. IV.

Control Form—Eco-restoration working Circle—Record of Plantations.

Prescribed.				Done.				Species.	Expenditure.	Revenue if any.	Remarks.
Year.	Locality and coupe number.	Area.	Operation.	Year.	Locality and coupe number.	Area.	Operauions.				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

FORM No. VI-A.

Control Form—Bamboo Working Circle—Record of Felling.

Prescribed.		Done.		Yield.	Revenue realised.	Remarks.
Year.	Coupe number.	Year	Coupe realised.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)

FORM No. VI-B.

Control Form—Bamboo working Circle—Record of Plantations.

Prescribed.			Done.				
Year.	Number of plants.	Area.	Year.	Number of plants.	Area.	Expenditure.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

FORM No. VII.

Control Form—Miscellaneous Working Circle (Minor Forest Produce)

Year.	Name of lease unit.	Revenue realised.	Yield obtained.	Remarks.
(1)	(2)	(3)	(4)	(5)

FORM No. VIII.

Record of Works.

Name of Working Circle (Common to all working Circles)

Prescriptions of the working Plan.				Operations carried out.						
Year.	Name of work.	Locality.	Area in hectares.	Year.	Name of work.	Locality.	Area in hec.	Cost of each item.	Total cost of each work.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

NOTE.—(1) Information entered in other forms need not be reported here.
(2) Separate sheet should be used for each working circle and miscellaneous regulations.
(3) Each working circle has to be written up under these headings, namely (a) Natures prescribed. in c (*b*) Measures suggested and (c) Measures neither prescribed nor suggested but carried out during the year.

(4) Section 44 of the Forest Department Code will be a guidance.

FORM No. IX.

Register of Deviation.

Serial number of deviation.	Year.	Working circle.	Working plan prescription.		Nature or deviation.	Reason for deviation.	No. 4, date or order sanctioning the deviation.
			Paragraph	Prescription.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

FORM No. X.

Annual summary of Revenue and Expenditure.

Serial number and Unit.	*Revenue realised.*	*Expenditure*	*Profit.*	*Loss.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1 Teak working Circle	–	...	...	..	...
2 Catamaran working circle –	–	–	–	..	...
Eco-restoration working circle –	–	–	–	..	..
4 Bamboo Working circle –	–	–	–	..	...
5 Grazing working Circle .. –	–	–	–	..	...
6 Miscellaneous Regulations –	–	–	–	–	–
7 Wildlife working Circle –	–	–	–	–	–
8 Soil Conservation working Circle	–	...	–	..	–

FORM No. XI.

Control Journal.

1 General	Comments and observations on the working of nine different working circles prescribed in the plan problems if any, sivicultural, administrative and any other aspect, suggestion for improvement.
2 Staff and Labour	Notes of adequacy of staff and availability of labour.
3 Jurisdiction and Headquarters..	Changes in jurisdiction of beats, sections, ranges and division, change of head-quarters for any of the units and necessity.
4 Roads, buildings and wells ..	Necessity for new roads, buildings and wells of improvements of the existing ones.
5 Wildlife	Position of same presentation improvements noticed in their population and movements, sanctuaries and refuges, suggestions for their improvement.
6 Forest Settelement Boundaries	Notes on progress made in Forest Settelement, Survey checking and maintenance of boundaries of the Reserved Forests.
7 Leases	Notes on cardamom leases, Chipboard Reeds, Electricity Board and Talayuthu Cement.
8 Maps and Journals	Whether control maps were posted showing coupes worked and all plantations raised within and outside plan prescriptions and also whether plantation journal were written up-to-date. Whether record copy of the Reserved Forest maps weres posted showing changes if any.
9 Miscellaneous	Separate notes on Arasu Rubber Corporation, Social Forestry, Nature Reserves, Royalties, Fire Protection, Rain gauges, Livestock etc.
10 Other activities	Planting and other measures undertaken outside plan prescriptions, experience and results.

N.B.—The District Forest Officer will bestow special attention in writting up the above control journal as it will form the basis to judge the works dones in the division and if maintained properly will be treat help when the plan comes to be revised.

APPENDIX-XVIII

RULES FOR THE TREATMENT AND MANAGEMENT OF HILLMEN. PASSED BY TRAVANCORE GOVERNMENT UNDER DATE THE 14TH DECEMBER, 1911.

The term "Hillmen" in these rules means and includes only the following tribes who have been living the hills from time immemorial and does not include any others :—

(1) The Kanidars residing in the hills of the Southern Trivandrum and Quilon Land Revenue Divisions extending upto and inclusive of the Shendurai Valley.

Pallityars residing on the banks of the Kallada and Achenkol rivers.

Hill Pulayas of Anjanad.

(2) Hillmen residing in Government Forests and Reserves shall be under the control of the Forest Department.

(3) Each settlement will have a headman, who has attained that position- either by hereditary right or by selection of section by the members of the settle ment, in conformity with the existing practice.

Provided that when a headman fails to carry out any of the duties, as here in after stated, the Divisional Forest Officer may call upon the adult make members to depose him and elect another competent man to take his place

(4) Hillmen residing in Government Forests and Reserves shall have their numbers registered in the Office of each Forest Division, and for this purpose the headman or each settlement shall report to the Range Office concerned, once a year, of whenever called on to do so, the name of his settlement of Kani, the number of males and females composing it, adults and children, children below three years being classed as under age.

(5) No hillman can leave his settlement or Kani Kigrate to another without- the permission of his headman. Appeals from the headman's decision shall like to the Divisional Forest Officer whose decision shall be final.

(6) The settlement or hillman residing in a Government Forest or Reserve shall be permanently fixed, and they shall not be permitted to shift them from place to place, except temporarily with the special written permission of the Divisional Forest Officer in cases of scarctiy of water, out break of epidemics, such as small pox etc.

(7) The hillmen shall enjoy the concession of cultivating land free of tax in the Government Forests and Reserves in which they live, to the extent of 5/8 of an acre per head for every member of settlement above three years of age.

(*i*) A compact block of land, comprising 7 times the total area required for each settlement in a year, deducting the area of wet lands permanently under cultivation, shall be demarcated by the Forest Department (the hillmen concerned providing the labour free of payment) and 1/1;7 of that area shall be cultivated in any one year so that the cultivation may be carried on permanently.

(*ii*) It shall be the duty of the headman to apportion the area among the several families of his settlement subject to an appeal to the Divisional Forest Officer whose decision shall be final.

(*iii*) In case of treaspass or encroachment in a settlement, the headman shall decide such disputes, subject to an appeal to the Divisional Forest whose decision shall be final.

(8) No hillman shall be entilted to the grant of patta for any cultivated in a Government Forest or Reserve, however long his occupation of such land may be.

Proviso.—The hillmen may, however be granted patta for caradamom lands in the tract set-apart for the gorwing of cardamoms subject to the condition that they shall not alienate such lands to any one other than among themselves.

(9) All produce of the land cultivated by hillmen in accordance with the oregoing Rule shall be the property of the hillmen and may be disposed of as they think fit except food grains and tobacco which shall not be sold or taken out of the Government Forest or Reserve, without the written permission of the Divisional Forest Officer.

Proviso.—The Divisional Forest Officer maybe delegate this power to such of his Range Officers as he thinks fit.

(10) The hillmen may fell and use any timber (other than of Royal or Reserve trees) and firewood, bamboos, reeds and canes, free of charge, for thier bondafide domestic and agricultural purposes and the last three, viz., Bamboos, reeds and canes may be used by them in the manufacture of petty articles for sale, provided however that the Government may at any time restrict or prohibit trade or charge a fee on the produce.

(11) The hillmen may collect and use, for their own consumption or for sale or for both, any minor forest produce not collected by the Government or leased by the Government to contractors or lessees, but the sale of minor forest produce for which seigniorage has been, or may hereafter be fixed by the Government, shall not be permitted.

(12) The hillmen may shoot game in wet weather from the 15th Vykasi to the 30th Karthigay except such animals and birds as may be prohibited by the Government from time to time, and they may catch fish, provided that the poisoning of water or the use of dynamatic or gunpowder for the purpose is not reported to. For the purpose of this rule and for the protection of person and property, each settlement may keep one gun ordinarily in the lay down any restrictions in respect of these previlages.

Proviso.—In exception cases the Government may authorise more than one gun being kept in a settlement.

(13) (Only licensed traders shall deal with the hillmen at their own settlment and such licensed traders shall neither land money, nor all, or buy anything on credit from the hillmen).

(*i*) Licenses to deal with the hillmen living without the Government Forests and Reserve will be granted by the Divisional Forest Officer to respectable traders who undertake to supply articles of daily use to them at reasonable rates, provided that they bind themselves to the following among other terms by executing formal written agreements :—

(*a*) Not to enter into any credit ransactions with the hillmen or to lend them money.

(*b*) Not to sell any intoxicating liquors or drugs to them.

(*c*) Not to quarrel with or illtreat the hillmen.

(*d*) Not to but grain or other articles the sale or removal of which is prohibited by the preceding Rules or by the Forest Regulation and Rules already in force or that may hereafter come into force, and

(*e*) To keep proper and clear accounts of all their transactions with the hillmen, which accounts shall be open for inspection by the respective Range Officer or Divisional Forest Officer.

(*ii*) Licences shall be liable to be revoked, withdrawn of cancelled for breach of any of the conditions of the agreement, the trader being rendered liable besides to the penalties prescribed therein.

(*iii*) Such licensed traders shall acquire no title whatever to lands occupied or cultivated by the hillmen under these Rules.

(14) "Able-bodied adult male alone shall be requisitioned for work for the Forest Department)" at prescribed rates of wages, such rates being fixed by the Divisional Forest Officer with the previous sanction of the Conservator, for three hrars at a time, calculated with reference to the wages paid during the proceding three years and the current market rates.

(15) The hillmen shall not set fire to the Forests and they shall take all possible care and precaution to prevent fires occurring in the Government Forests and Reserves. Tney shall assist the Forest Officers in preventing the occurrence or commission of offences, and the occurrence of fires and in extinguishing such fires.

(16) All hillmen shall assist the Police, Revenue or other officers of the Government in preventing crimes, or in detecting offenders who may have sought shelter or refuge in the Government Forest or Reserves.

(17) Hillmen shall not harbour or allow to remain in their settlements, any low and criminals or persons likely to commit anybreaches of the forest or other laws of the country, nor shall they take into partnership any outsiders, in their cultivations within the Government Forests or Reserves or in their hunting of shooting excusions.

(17) (*a*) Hillmen shall not cultivate ganga plants (Cannabis sativa) in any of their settlements, and shall root out and destroy all such plants wherever they find them in the Government Forests and Reserves.

(18) They shall be further, bound to deliver to the Forest Department and ivory, elephant, teeth, cardamoms wax, dammer and lac colletced by them, as well as honey or any other forest produce which they may be called upon to collect and deliver to the Forest Department in return for which they will be paid at the rates fixed in the following schedule :—

Number of Produce.	*Rates.*
(1)	(2)
1 Ivory	Ist class (weighing 18 lbs. and above per tusk) 7 fs. per lb.
Ivory	2nd Class (weighing below 18 lbs. but above 13 lbs. per tusk) 5½ ft. per lb.
Ivory	4th class (weighing below 7 lbs.) 1¾ ft. per lb.
2 Cardamom ..	With husk, 35 ft. per Thu lam.
Cardamom ..	Seeds 26 ft. 3 chs 4c. per Thulam.
Cardamom ..	Chaff with husk 6 ft. per Thulam.
Wax	45 ft. per Thulam.
4 Dammer	6 ft. per Thulam.
5 Honey	17 ft. fs. per parah.

For articles for which rates are not prescribed inthe above schedule, the hillmen will be paid an amount not exceeding one-half of the saleproceeds of such article with the sanction of the Conservator of Forests.

(19) Any hillman found to wilfully violate, or set in contravention of these Rules to the Forest Regulation and Rules, shallbe liable tobe expelled from his settlement in a Government Forest on Reserve, temporarily or permanently with provisions sanction of the Government Forest besides beingsubjected to the penalties prescribed in the Forest Law.

APPENDIX XIX.

CLOSSARY OF VERNACULAR TERMS IN VOGUE IN KANYAKUMARI.

Chavuku theervai .. .. .. The excise duty payable on forest products when they are exported outside the State.

Karem ... ... The land revenue payable on lands, coffee land holdings.

Kolvila .. .. The cost of felling, conversion and transport to the sale depot, per cubie foot of timber.

Kudivila .. .. The portion of net sale proceeds of Royalties payable to the owner of the land where the royalties stand.

Kuthagipattam ... . This is the lease or assignment of Government lands to private bodies and such lease may be with or without time-limit.

Kuttikanam: .. .. Means stump fee, and is the rate payable to the Government or to the owner of the land. This may be expressed as to much per stamp (i.e. tree) or per cft. as per set of spokes and felloes and is equated to seigniorage.

Mellabhom .. .. Is the price given by the purchaser for timber or forest produce collect at his own expenditure, the price being fixed by auction, tender or negotiation. This will be always more than Kuttikanam or seniorage hence known as Mellabhom.

Podhiyu ... . Registered land as registered holding. It may be lease or assignment.

Pandaramattam .. .. .. Is a mode or assignment or leasing of land in which the Government collectes both the Tharavilla (land value) and thadivilla (tree value).

Royalty .. .. Any of the tree species, over which Government has monopoly, wherever it grows on occur like Teak, Rose wood , Ebonyi, Sandal, Ivory.

Seiniorage .. .. It is the fee fixed by Government at which forest produce is allowed to be removed the forest, mostly for local consumption.

Tariff rates .. .. This is the rate at which Government authorities the subordinate officers to sell timber and forest produce at sale depots. This will be seigniorage plus working charge plus profit. This is arrived at by averaging some past prices.

Taungya .. — — ... It is a method of regenerating forests along with agricultural crop known as kumri method in Tamil Nadu.

hadivila ... . Value of timber standing in the land. It means tree value.

Tharavila ... — — .. The land value i.e., when the land is assigned if the land value alone (no tree value) realised, it is called Tharavila.

APPENDIX XX.

MISCELLANEOUS PLANTATION RAISED IN KANNIYAKUMARI DIVISION.

Serial number.	*Year.*	*Location.*	*Name of Plantation.*	*Area.*	*Species raised.*
(1)	(2)	(3)	(4)	(5)	6)
1	1978	Thadagamalai R.F. ..	Thadagai beat	5.00	Tamarind.
2	1979	Kottakarai R.L. ..	Kottakarai	20.00	Do.
3	1960	Kovalam	Wind belt Plantation.	2.85	Casuarina.
4	1961	Do.	Do.	1.02	Do.
5	1962	Do.	Do.	0.41	Do.
6	1963	Do.	Do.	1.51	Do.
7	1963	Do.	Do.	0.81	Do.
8	1965	Do.	Do.	0.81	Do.
9	1966	Do.	Do.	0.81	Do.
10	1968	Do.	Do.	0.81	Do.
11	1969	Do.	Do.	0.81	Do.
12	1970	Do.	Do.	1.1	Do.
13	1971	Do.	Do.	2.0	Do.
14	1972	Do.	Do.	5.6	Do.
15	1973	Do.	Do.	4.0	Do.
16	1974	Do.	Do.	2.4	Do.
17	1975	Do.	Do.	10.0	Do.
18	1983	Panangudi ..	Sivasamipuram	15.0	Eucalyptus.
19	1978	Pechiparai Grazing Block.	Euc. Hybrid plot.	7.5	Do.
20	1986	Boothapandi Range ..	Silvipasture.	10.0	Silvipasture.

APPENDIX XXI.

Details of MAPS.

Detailed Maps.:	Scale	Number of maps
Teak Working Circle:		
Kulasekaram Range	4"—1 Mile	1
Alagiapandipuram	4"—1 Mile	1
Boothapandi Range	4"—1 Mile	1
Catamaran working Circle :		
Kulasekaram Range	4"—1 Mile	2
Alagiapandipuram Range	4"—1 Mile	2
Boothapandi Range	4"—1 Mile	[illegible]
Bamboo Working Circle :		
Kulasekaram and Alagiapandipuram Range.	4"—1 Mile	[illegible]
Eco-Restoration Working Circle :		
Boothapandi Range	4"—1 Mile	1
Miscellaneous Regulation :		
Boothapandi and Kulasekaram Range	4"—1 Mile	[illegible]
Kovalam Coastal Plantation Boothapandi Range.	1cm.—40 Mile	1
Range Management Maps :		
Kulasekaram Range	1"—1 Mile	1
Alagiapandipuram Range	1"—1 Mile	1
Boothapandi Range	1"—1 Mile	1
Forest Type Map for Kanniyakumari Division	1"—2 Mile	1
Key Map for Kanniyakumari	1"—2 Miles	1
Sketch showing location of Kani settlement Map.	1"—1 Mile	

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